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The Royal Architectural Institute of Canada
L'Institut Royal d'Architecture du Canada

Founded in 1907 / Fondé en 1907

Patron : Her Majesty the Queen
Sous le patronnage de Sa Majesté la Reine

Headquarters / Siège Social

75 Albert Street, Ottawa 4, Ontario
Executive Director / Directeur Général
Fred W. Price
Executive Secretary / Secrétaire Administratif
Maurice G. Holdham, MBE

Communiqué 2

From Institute Headquarters

The RAIC has been awarded a $4,000 grant by the Centennial Commission to assist in publication of an illustrated volume, *Historic Architecture of Canada*. The illustrations are from the 166 photographs forming the exhibition of this title which is currently on tour. Dr Eric Arthur (*F*) and colleagues of the RAIC Committee on Preservation of Historic Buildings were responsible for this collection of photographs, with the assistance of the Federal Government.
Publication plans for the volume are now under way. It is hoped that special provisions for its distribution to high schools and colleges can be arranged, as an aid to studies in Canadian history and culture.

Howard Ashley, FRIBA, of Kuala Lumpur, Malaya, has received the Pan Pacific Architectural Citation of the AIA Hawaii Chapter. Previous winners include Arthur C. Erickson of Vancouver.
Mr Ashley's selection is in recognition of his demonstration of outstanding design ability in government and other major buildings of Malaya.
During the presentation ceremonies at the end of January, a display of his work was presented at the Honolulu Academy of Arts and he delivered a lecture at the University of Hawaii.

The Canadian Wood Design Awards 1965 will be presented at a dinner in Ottawa on April 18. The architect members of the Jury, James W. Strutt (*F*), C. E. Pratt (*F*), and Roger d'Astous, participated in the final judging in February. There were 112 entries.

Members will be interested in the Wood Data Binder being distributed by the Canadian Wood Council, 75 Albert St., Ottawa 4.

There is useful reading for architects in the new booklet on *Financing Canadian Industries*, available from the Department of Industry, Ottawa. It includes sections on Partnerships, Loan Capital, and Government Financing Facilities.

Then the January issue of *Fortune* featured an excellent article by Walter McQuade, AIA, entitled "The Architects: A Chance for Greatness". This is "must" reading for the profession.

A worthwhile book: *The Regional City*, by Professor Harold Kaplan, York University, Toronto. Five lectures, broadcast in the CBC University of the Air program series, on the state of politics and planning in metropolitan areas, including the transformation of urban centres. Available at $1.25 from: *CBC Publications*, Box 500, Terminal "A", Toronto 1, Ontario.

Fred W. Price
Executive Director

Du siège social de l'Institut

L'Institut vient de recevoir de la Commission du Centenaire une subvention de $4,000 pour l'aider à la publication d'un volume illustré sur "L'architecture historique au Canada". Les illustrations sont tirées des 166 photographies comprises dans l'exposition qui circule actuellement sous le même titre au Canada. Cette collection de photographies a été montée par M. Eric Arthur (*F*) et ses collègues du Comité de l'Institut sur la conservation des édifices historiques, avec l'aide du gouvernment fédéral.
Les plans de publication sont commencés. Nous espérons arriver à prendre des dispositions spéciales afin d'en assurer la distribution dans les écoles secondaires et les collèges, pour aider à l'enseignement de l'histoire et de la culture canadiennes.

M. Howard Ashley, FRIBA, de Kuala-Lumpur (Malaisie), a reçu la Pan Pacific Architectural Citation de la section d'Hawaii de l'AIA. Parmi les gagnants antérieurs se trouve M. Arthur C. Erickson de Vancouver.
M. Ashley a mérité cet honneur par la compétence dont il a fait preuve dans l'établissement des plans d'édifices gouvernementaux et d'autres édifices importants en Malaisie.
A l'occasion de la cérémonie de présentation, à la fin de janvier, il y a eu exposition des oeuvres de M. Ashley à l'Académie des Arts de Honolulu. M. Ashley a aussi donné une conférence à l'Université de Hawaii.

Les prix du Concours canadien d'ésthetique 1965 constructions en bois seront présentés au cours d'un dîner, à Ottawa, le 18 avril. Les architectes membres du jury, MM. James W. Strutt (*F*), C. E. Pratt (*F*) et Roger d'Astous ont participé au choix final des gagnants. Il y avait 112 concurrents.

Un document d'intérêt pour les membres est le Wood Data Binder, distribué par le Conseil canadien du bois, 75 rue Albert, Ottawa 4.

Une nouvelle brochure du ministère de l'Industrie à Ottawa, intitulée "Le financement des industries canadiennes", est de lecture intéressante pour les architectes. On y trouve des chapitres sur les sociétés en nom collectif, les capitaux d'emprunt et les services de financement du gouvernement.

Le numéro de janvier de *Fortune* présente en vedette un excellent article de Walter McQuade, AIA, intitulé "The Architects: A Chance for Greatness". La lecture de cet article s'impose à tous les membres de la profession.

Un livre important vient de paraître: *The Regional City*, du professeur Harold Kaplan, University York, Toronto. Il comprend cinq conférences présentées sur les ondes dans la série "University of the Air" de Radio-Canada, sur la situation politique et l'urbanisme dans les régions métropolitaines, y compris la transformation des centres des villes. Ce volume peut être obtenu des *Publications de Radio-Canada*, Boîte postale 500, Bureau "A", Toronto 1, Ontario, au prix de $1.25.

Le directeur général,
Fred W. Price

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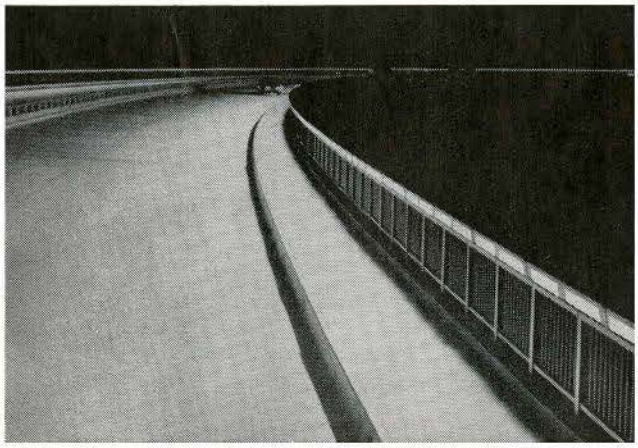
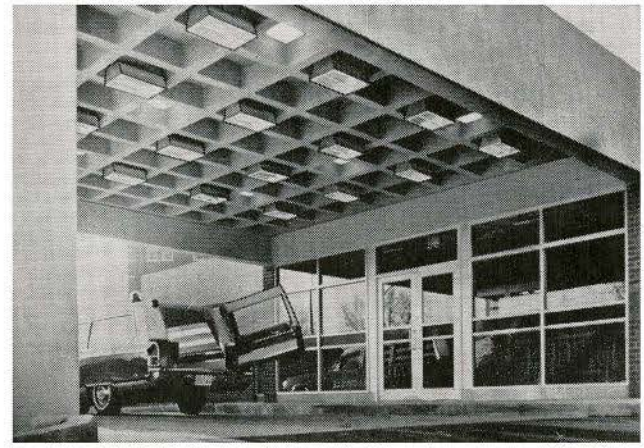


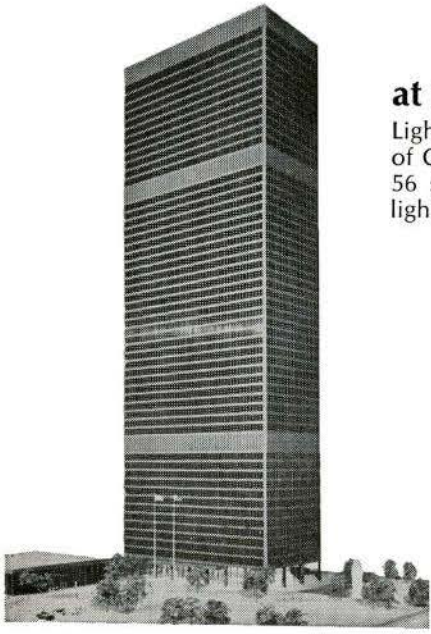
at PORT MANN BRIDGE (FRASER RIVER)

Lightweight, corrosion-resistant Reynolds aluminum was specified for the 1,700 CGE LUMERAIL luminaires, designed and manufactured by Canadian General Electric, and used to light the 7,000 ft. Port Mann Bridge. Reynolds aluminum was chosen for its ease of installation, its maintenance-free qualities, high reflectivity, and its flexibility.



at TORONTO EAST GENERAL HOSPITAL

Lightweight, weatherproof Reynolds aluminum was specified for the CGE Infrared Lamp fixtures OK30-30-04S installed in the hospital's emergency entrance. Reynolds aluminum was chosen because of its rust-proof qualities, which make it ideal for either outside or indoor installations, and because of its beauty. Canadian General Electric Infrared lamp fixtures provide warmth for patients and keep pavement dry and free of snow.



at TORONTO-DOMINION CENTRE

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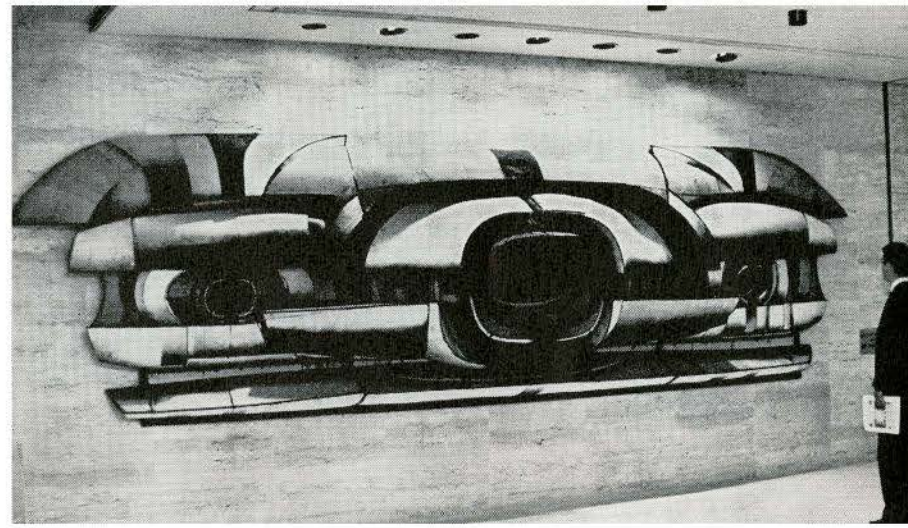
New York Scene

Arts 3

In my view, one of the least expensive but artistically most stimulating way to spend a week-end is to visit New York. It is worth a whole year in most other places. I went there to view the exhibition of the Architectural League of New York and see the photographs of award winners in the field of the allied arts. The theme was "The progress that has been made in three years in inter-related arts and architecture, interior designing, engineering, murals, sculpture and landscaping." The exhibition consisted of a display of fine photographs but was not as exciting in presentation or as comprehensive as a similar Canadian exhibition, at the 1965 RAIC Assembly in Montreal. However, visitors were supplied with a printed brochure and a typescript of the various awards, with excellent photographs for press publication, and one felt the service for the information seeker was good.



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I am not too familiar with the past work of the League, but being aware the show was small, with photos of prize winners only being displayed, I left with a feeling that, from what was shown, it would be difficult to assess what is really going on in the United States. Most of the prize winners were the big names in arts and architecture. The examples may have looked very contemporary, but I saw little really new work by up and coming young and experimental artists. Maybe one can except the examples from the New York World's Fair. This was significant. I have often doubted the justification for the usual vulgar hand springs from such exhibitions, but they may have validity as platforms for vital experimentation.

The exhibit showed that the winners possessed the technical skill and mature talent to respond to the architect's requirement with works of relevant scale – all of it competent to the point of being thrilling. Artists employed on Centennial Projects in Canada owe themselves a visit to New York to see competent integration with architecture, especially the Pan Am Building on Fifth Avenue. However, conceptual image has given way to either decorative adornment or submissive integration. In general, there is little of totemic accent, but the maturing school of constructivism – maturing since 1920 – has found a compatibility with architecture and, thankfully, replaces the period of "descriptive analogy" which still haunts the Canadian scene. It was also apparent that few architects had attempted the task of enshrining an important totem or "image", with one grand exception – the Henry Moore at Lincoln Centre. Any number of first rate sculptural totems and "contemporary" icons are around at exhibitions, but architecturally, one fails to find them accommodated successfully. Lincoln Center has collected and placed quite exciting pieces but most of them are in unhappy competition with their surroundings.

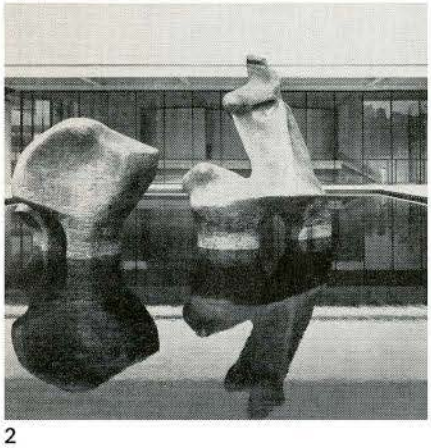
Many works in the League's exhibit caught the eye. The solutions for "Cinema I and II" in New York City by Norman Ives, Stefanie Scuris and Sewall Sillman, looked exciting. Unfortunately I was not able to see the originals. An intriguing-looking structure, for what purpose no one could tell me, was "The Round House Co-operation, East Hamilton" with its equally intriguing artifacts – weird ceramics and other items by Karen Karnes, a potter; stained glass by Erik Erikson. Robert Rosenberg was the architect.

Isamu Noguchi, who was awarded one of the League's gold medals, has work featured in many places, including the Chase Manhattan Bank in New York, the Beinecke Rare Book and Manuscript Library at Yale University, the John Hancock Mutual Life Insurance Company in New Orleans, and others I saw on exhibition in New York at the time. Noguchi is probably the most distinguished and the most successful sculptor in the last 20 years to integrate his work thoroughly with architecture. He enhances and "sculpturescapes" buildings without loss of personal statement. His forms and elements, and even floor plans, always rise above the level of pure decoration and invest the complete area with metaphysic charm. Function becomes ritualistic. His very sculptural forms are timeless and belong to the artificial environment of architecture as truly as the stones and boulders of outcropping forms belong in natural fields. His capacity to invest the sterile geometry of architecture with an artificial but organic comment is superb.

The exhibit photograph of a large wall screen mural by Beula Mullins looked

1
"Untitled Relief 1964"
a welded steel sculpture by Lee Bontecou
"Relief sans titre 1964"
sculpture en acier soudé par Lee Bontecou

2
Henry Moore sculpture
Lincoln Center Plaza
Sculpture par Henry Moore
Lincoln Center Plaza
3
"Flight" by Richard Lippold
Pan Am Lobby, 5th Avenue
"Vol" par Richard Lippold
dans l'entrée du Pan Am



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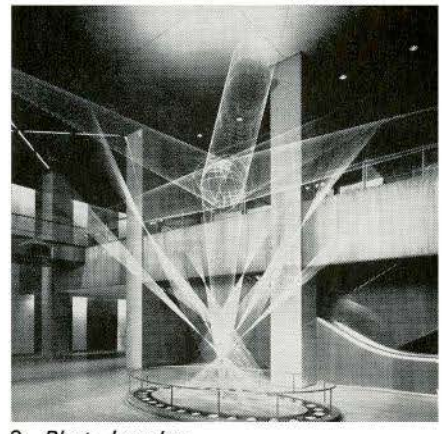


3 *Photo Langley*

attractive, but unfortunately I was unable to see it in situ in the Western Electric Building. If this work preceded her commission for Simon Fraser University in Vancouver, one can understand the commission, and it is a great pity that the promise here was not realized in her Canadian effort.

Harris Barron graced Parkside Elementary School in Columbus, Indiana, with an award winning sculpture. It is a pity most of our local school boards look upon sculpture and other art as an unnecessary luxury. No wonder we breed illiterates in contemporary art when adults deprive the young of awareness of contemporary forms in the domestic field of education.

Lincoln Center

I noted with interest that the New York State Theater received a citation for "Collaboration", with a long list of collaborators: Philip Johnson, Architect; Severud-Perrone/Fischer/Sturm/Conlin/Bandel, structural engineers: Syska & Hennessy, Mechanical Engineers: Richard Kelly, Lighting Consultant; and sculptors Lee Bontecou, Edward Higgins, Jacques Lipchitz, Eli Nadelman and Frances Somani.

I hurried off to Lincoln Center and was afforded a most interesting, sensitive and erudite tour by a very young and charming guide, who as it turned out, had immigrated from Germany only six weeks before. With me were two New York sculptors, and this soon was sensed by our guide who, after explaining that the corps of guides did not comment on the Center's works of art because of the often violent reaction to them on the part of (this was carefully emphasized) "out of town visitors". Our guide skilfully exploited the three of us with the result that, at the end of the tour, we were given a solid round of applause from our – presumably – mature New Yorkers.

About the Center itself, I did not feel it was nearly as good an example of integrated art and architecture as Place des Arts in Montreal, although the collection itself is exciting. The courageous attempt by Lippold to create a vibrant and dynamic ceiling structure with suspended elements of copper and stainless steel "Orpheus and Apollo", may have an operative charm at night (when I have not seen it) but in daylight it only adds confusion to an already over-busy lobby. His gold and steel wire construction "Flight" for the lobby of the Pan Am building is so much more successful.

Apart from Lippold, the only other serious attempts at integration, apart from collecting and placing, were the Nadelmans and the Bontecu mural. This last, strong, exciting and very contemporary mural is a winner. The placing could be deemed a near miss.

One is at least able to view it in the comfort of distance and space and, like the Riopelle at Toronto airport, it manages to compel and transcend incidental comings and goings from the stairways and exits. I have long been interested in the dynamic, evocative imagery of this powerful artist, who, with a collage of extraordinary technical skill in canvas, leather, epoxy and welded steel, manages to invest all the separate materials of contemporary waste with an authority and power which would seem to make traditional materials unworthy and insipid. Here is an artist architects should watch for I feel that greater statements are still to be made in her maturity.

Another real attempt at integration is the astonishing placing in the New York theatre of two huge blow-ups of the witty, papier mâché marquettes of the late Elie Nadelman. The blow-ups (and how) are executed in lush Carrara marble (rather unhappily carved) and placed one at each end of the promenade or lobby. The whole thing is a piece of gentle madness in itself, or high camp, depending on how it strikes you, with a little of Nadelman's wit and humor showing through the graceless, affluent lumps of marble.

I sigh for the works of Dimitri Hadzi, whose arabesques invite participation in their Mozartian dance. His and other interesting works compete with the clap trap of fenestration, narrow corridors and emerging audiences. When one is fortunate enough to have generous donors, one must really do better. Interior decorator or architect must not look on works of art as ornaments or punctuating elements replacing floral arrangements.

Last but not least

The Henry Moore here at last is one of the happiest enshrinements of the great work of a contemporary master I have yet had the pleasure to see. Words or photographs cannot do the setting and the work justice. It is an experience. The sculpture itself is probably Moore at his finest. It breaks no new ground but in its maturity is a synthesis of

all Moore. It fixes his contribution in sculptural imagery for this century. Monumental, brooding, it commands its presence to be felt and seen. Dominating its quiet but large cell of the exterior walls of adjacent buildings, it emerges as a giant force, certain of its own existence. Mirrored in the occasionally rippled pool of dark waters from which it emerges, the towering forms and empty arches find their echoing spirits.

Nearby, Vivian Beaumont Theatre by Saarinen, a delightful, small masterpiece, does homage to the god-totem by providing a "hand mirror" in its glass façade to reflect the frontal forms. How happily two masters of a passing era do credit to each other in effective simplicity. With regret one leaves the chamber of contemplation, free of clutter and plentious of space to amble as leisurely as on a sea shore, dimly aware only of the cacaphony of noise duelling architectural façades confronting the portals to the adjacent city.

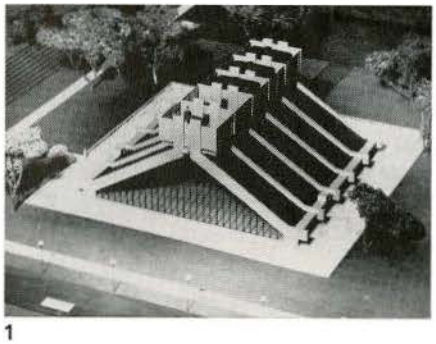
Finale

All this and heaven too in one weekend. I visited at least ten of the 25 major sculpture shows on in New York that weekend. The impact of show after show of first rate contemporary sculpture; beautifully executed bronzes and brasses 20 to 20 feet high; wall murals in metals expanding over 12 by 50 feet, with as many as 30 to 40 pieces in each show, leaves one speechless.

What affluence. What faith in art and sculptors. It is not possible for the artists alone to bear the enormous cost involved in materializing such visions splendid. Here, art and artists are worthwhile risks. Pan Am with the acquisition of the works of great contemporary artists – Lippold, Kepes, Albers, show the way to create a living gallery.

For Canada to catch up in its art forms with its architectural statements, it will need to employ and capture the skills and imagery of its foremost contemporary young creators and not play it safe with the vintage of 1914.

Anita Aarons



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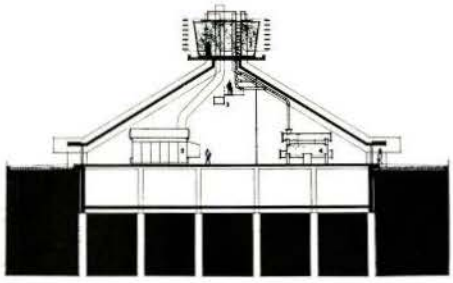

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Central Heating and Cooling Plant,
University of Saskatchewan
H. H. Angus & Associates Ltd., engineers
Clifford Wiens, architect **(Figs 1, 2)**

In contrast to the buildings completed at Wascana Centre, Regina (January Review), this heating and cooling plant, now under construction, has clearly been designed for its purpose; the foundation system is a cast in place bell pile bearing on glacial till, a basement area of in situ concrete, and appropriately the skeletal superstructure is of post tensioned precast concrete beams and deck. The infil panels are of cast mica glass.

The basement serves as a distribution area for pipes, valves and controls. The apex of the structure holds the cooling towers – the platform support serves as a vat for the return water system, thereby making it unnecessary to pierce the sloping roof.

The problem of weathering has been accepted by allowing for the oxidation of the metal elements, and a patina of dirt to accumulate on the rough concrete which is ex form, without spoiling the pristine edifice. The glass can, on the slope, be washed down from the overspray of the cooling towers.

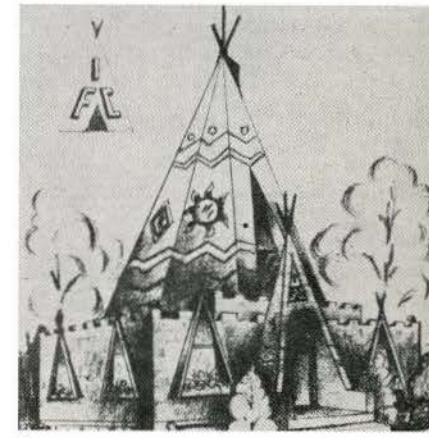
The client commissioned the entire project to the consulting engineers in the belief that the project was essentially mechanical engineering. The architect as a result was retained by the consulting engineers. The working relationship has, however, evidently been one where the prime consultant and the architect have worked more in the form of collaboration to serve a mutual client.
H. H. Angus & Associates Ltd. deserve a great deal of credit for this.

"Construction of a new Indian Friendship Centre is planned at 504-4th Avenue SW, Calgary, by the Indian Friendship Centre Society. The three-storey building, estimated to cost $150,000, will be built in the traditional teepee style. Owner hopes to appoint an Indian architect. Work on the project is tentatively scheduled for July of 1966, with completion by early 1967" – *Journal of Commerce Weekly*.

No doubt built in that traditional Indian material, concrete. **(Fig 3)**

Israel Museum, Jerusalem
Werk, December 1965
The museum consists of a group of buildings; the archaeological museum, the Bezalel Museum, both designed by Alfred Mansfeld and Dora Gad, and the Shrine of the Book **(Figs 4, 5)** Architects Frederic Kresler and Armand Bartos, landscape Isamu Noguchi.

The first two complexes represent a sort of nostalgia for the form of ancient villages of the country, the Shrine of the Book is designed in the CB de Mille style – obvious symbolism in bright technicolor, a tour de force obscuring the greater and more subtle drama of the dead sea scrolls themselves, which the Shrine houses.



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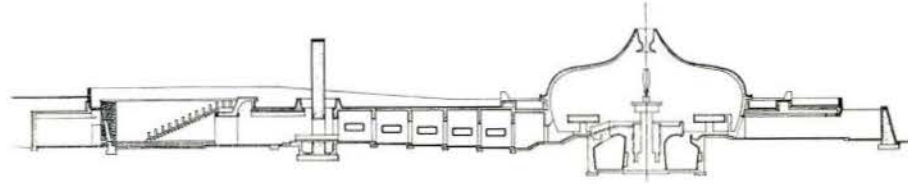

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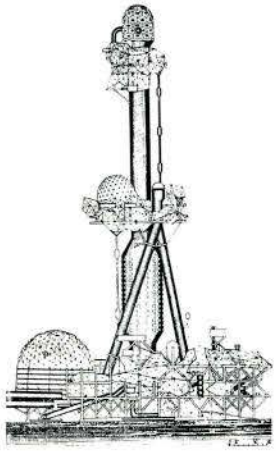

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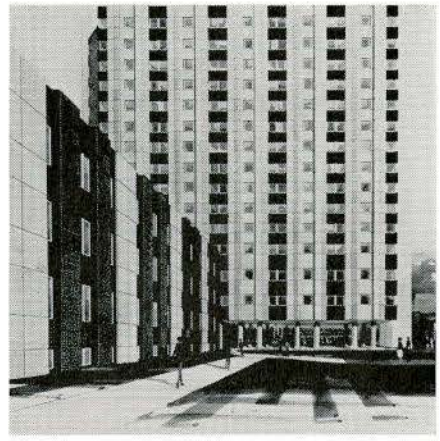
Archigram Group, London
Architectural Design, November 1965

A loosely bound group with a common interest in urban form. They have individually and collectively designed, both serious serious, and serious provocative projects. They range from multi-use complexes **(Fig 6)** to plug-in cities formed on large scale network structures. However, they all approach this large scale problem from a form-and-technology-as-a-priority point of view.

Henry Marshall Tory Building, University of Alberta, Edmonton.



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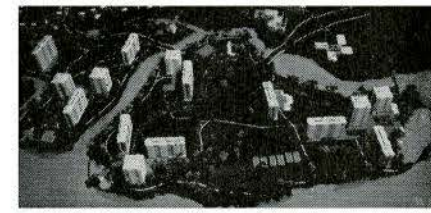
We publish, without comment, this rendering of the building **(Fig 7)**, and extracts from a press release: "An attractive exterior design for the Henry Marshall Tory Building of the University of Alberta, Edmonton, was produced by installing service pipes on the outside wall and insulating them with rigid urethane foam. Insulation with rigid urethane foam was carried out by pouring the mixed chemicals into triangular plywood forms placed around the pipelines and allowing the foam to rise within them. Eight tons of urethane foam were used to complete the insulation of the pipes. After the foam had cured, the plywood forms were removed and replaced with cut stone facings."

Havre Des Iles, Laval, P.Q. Architects
Swartzman, Warshaw & Bobrow
O'Neill & Swartzman, Townplanners **(Fig 8)**

Phase 1, now completed, comprises of three buildings totalling 378 units. The ultimate population will be 10,000. No one needs to leave this oversized club, except to work.

Frankly based on getting maximum return from the cost and amount of land used, the prime reason advanced by the designers for the isolated point block is the use of Corbusier's principle of towers in parks: supposedly urban living in the country. Any reader of Jane Jacobs knows the fallacy of this idea.



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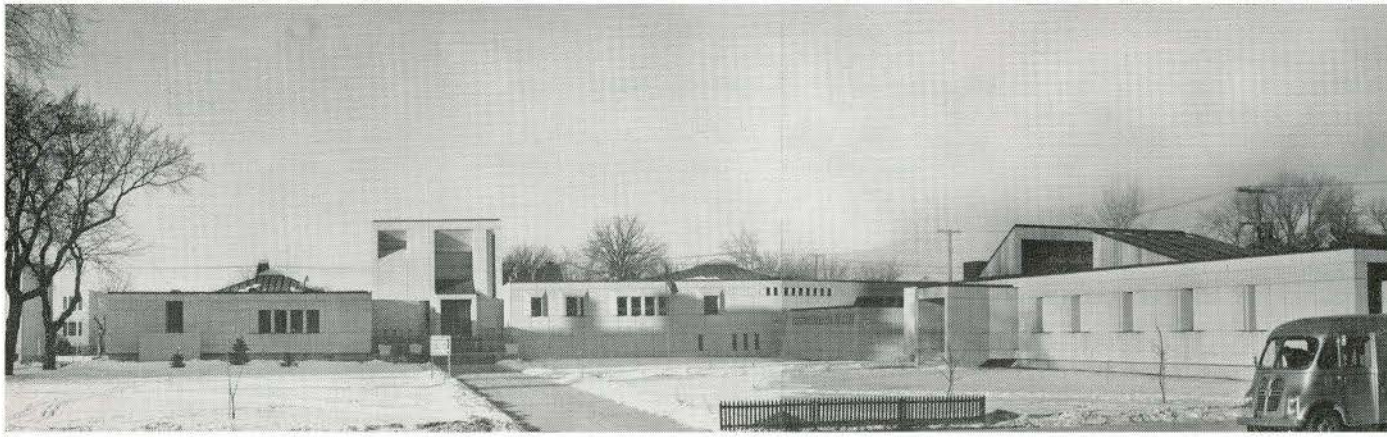
Civic buildings group by Gaboury, Winnipeg **(Fig 9)** Recently completed is this fine complement of buildings – perhaps the only detailed criticism that might be made is the dubious use of pseudo masonry panel cladding.



9

Résume

Résumé de l'article de Robert H. Blackburn sur l'Organisation des Bibliothèques Universitaires, par Denis Lamarre.

L'architecte chargé de préparer les plans d'une bibliothèque universitaire devrait posséder deux livres de publication récente qui, ensemble, couvrent bien le sujet. Nous les décrirons d'abord brièvement, puis nous y ajouterons des recommandations tirées de notre expérience.

Le premier volume d'intérêt général est le "Library Building of Britain and Europe", d'Anthony Thompson publié par Butterworth de Londres en 1963. La première partie est un guide des procédés de planification et un résumé des besoins et des problèmes des bibliothèques de toutes sortes. La deuxième partie trace d'abord un historique des bibliothèques, puis donne la description de plus de soixante édifices érigés dans les cinquante dernières années: bibliothèques nationales, bibliothèques publiques, bibliothèques universitaires et bibliothèques d'entreposage. Les descriptions comportent plusieurs plans, des tableaux comparatifs et des photographies.

Le second volume est le "Planning Academic and Research Library Buildings" de Metcalf, publié par McGraw-Hill en 1965. Ce livre, d'une moins grande portée que celui de Thompson, illustre un point de vue purement américain et contemporain.

La première partie du livre contient une masse de renseignements de base accompagnée d'un exposé de problèmes et de solutions, ainsi que des comparaisons de coûts de construction et d'opération.

La deuxième moitié est un reportage détaillé du procédé complet de planification à partir des premières discussions jusqu'à l'occupation de l'édifice.

Nous y trouvons également de nombreux appendices, dont un glossaire et une bibliographie annotée.

Pour l'architecte, la planification d'une bibliothèque universitaire est crée de multiples difficultés. Il doit tenir compte de la géographie et de la physionomie du campus, obtenir la participation active du bibliothécaire, de ses adjoints et des directeurs de département.

Le comité de construction est généralement varié dans sa composition et l'architecte doit s'attendre à des opinions divergentes. Certains membres du comité verront la bibliothèque comme une cathédrale, telle un symbole historique de l'église, gardienne du savoir. D'autres la verront comme une sorte de phare, de tour. D'autres, encore, la verront comme une combinaison d'une centrale téléphonique, d'un centre de calcul électronique et d'un laboratoire de photographie. Quant aux membres du comité qui s'intéressent particulièrement aux livres, aux lecteurs et à l'esthétique, cette vue peut bien leur laisser croire que la bibliothèque est une espèce d'usine modulaire dont les planchers pourraient supporter 150 lbs au Pl./Ca partout et qui ne doit avoir qu'une seule entrée munie d'un tourniquet. C'est à l'architecte de faire la part des choses et d'organiser l'édifice fonctionnellement et en tenant compte des besoins futurs. Il découvrira alors sûrement que le bibliothécaire vise en définitive au même but et comprend que l'édifice doit plaire et inspirer aussi bien qu'être un instrument efficace.

Version française de l'article par Monsieur Alexander B. Leman sur les Services Architecturaux.

I Analyse de Projet

A Etudes de Praticabilité

1 Nécessité d'une bibliothèque
2 Type de bibliothèque
3 Emplacement
4 Stratégie de la procédure et stratégie financière
5 Budget préliminaire

B Etudes de l'Emplacement

1 Arpentage
2 Utilisation de l'emplacement
3 Relation de l'emplacement par rapport aux environs
4 Population à déservir
5 Population future
6 Moyens de transport
7 Configuration et forme de l'emplacement
8 Nature du sous-sol
9 Coût d'achat et d'amélioration

C Programme d'opération

1 Enoncé des buts
2 Choix des systèmes
3 Méthodes de contrôle d'opération
4 Services autres que les livres
5 Usage communautaire – type et fréquence
6 Ameublement et équipement
7 Surfaces requises

D Programme de Construction

1 Philosophie de base
2 Emplacement et climat
3 Surfaces requises
4 Relation des espaces
5 Contrôle de la température et de l'humidité

E Budget

1 Coût de construction
2 Honoraires professionnels
3 Ameublement et équipement
4 Livres
5 Coût d'opération

Il a été dit que toute question contient déjà la moitié de sa réponse. Un énoncé lucide et complet du problème aide à apporter la meilleure solution. L'étude des buts visés, quoique vague, quelquefois, provoque toujours une analyse profonde de la part des intéressés.

Cette partie du travail est souvent écourtée. Pourtant c'est là que les idees sont avancées, discutées ou rejetées et que l'entente se fait entre l'architecture et le bibliothécaire.

Si un spécialiste est consulté, sa contribution essentielle se fait ici. Il peut également apporter son aide à l'item D, en particulier aux postes 3 et 4.

II Planification et Composition Architecturale

A Planification du Travail

1 Procédure opérationnelle
2 Systèmes et procédés
3 Fonctionnement
4 Opération
5 Organigrammes
6 Ameublement et équipement
a) Devis descriptif
b) Achat
c) Mise en place
d) Entretien

B Plans et Devis

1 Avant-projet
2 Estimés préliminaires
3 Esquisses
4 Devis sommaire
5 Estimé revisé
6 Plans d'exécution
7 Devis

C Experts-Conseils

1 Génie
2 Paysagisme
3 Métiers d'arts
4 Ameublement et équipement
5 Acoustique
6 Eclairagisme
7 Contrôle de la température et de l'humidité

C'est ici que le travail fait à la phase I porte ses fruits. Le "temps perdu en discussions inutiles" s'avère d'intérêt. Les décisions prennent corps ; elles sont plus consistantes et sont accompagnées de la satisfaction de savoir qu'il n'y aura plus à y revenir.

Les mots utilisés doivent avoir la même signification pour tous. La flexibilité, par exemple, ne doit pas être confondue avec la possibilité d'agrandissement.

III Construction

A Soumissions

1 Demande de soumissions
2 Examen des soumissions
3 Réception
4 Rapport sur les soumissions

B Contrat

1 Rédaction du contrat
2 Assurances

C Surveillance

1 Programme de travail
2 Echéance des paiements
3 Certificats de paiements
4 Vérification des dessins d'atelier
5 Surveillance périodique
6 Garanties et certificats
7 Ameublement et équipement
8 Graphisme architectural

IV Après La Construction

A Période de Garantie

1 Réparation des imperfections
2 Inspection finale
3 Renseignements concernant l'usage de l'édifice

B En Général

1 Evaluation concernant l'usage de l'édifice
2 Entretien
3 Modifications
4 Améliorations

Voici la partie affaire et technique du projet. L'architecte aura à expliquer au bibliothécaire que ses locaux sont satisfaisants alors que les murs sont à demi montés.

Si l'architecte et le bibliothécaire ont décidé "d'aller de l'avant" et de construire sans tenir compte de la Phase I, c'est alors que les difficultés vont surgir et que les changements vont se produire. C'est la minute de vérité. Le budget peut être défoncé et l'architecte décider qu'il ne veut plus voir l'édifice de sa vie.

Ce stage est aussi généralement négligé. A notre avis, l'architecte devrait être appelé en consultation ne serait-ce que pour décider de la couleur pour repeindre après quelques années.

Les édifices et leur cadre aussi bien que les intérieurs doivent être l'expression du concept de base et refléter chacun de ses facteurs.

Si le bibliothécaire apporte des changements esthétiquement inacceptable, s'est probablement parce que le programme n'a pas été interprété comme il aurait dû l'être

Elements in Planning a Library Building Program

In the following pages we publish contributions from those concerned with planning and constructing libraries. The material comes from both architects and librarians, in an effort to provide a comprehensive approach to library design. We are grateful to those who have helped, and regret that we could not publish all the material received.

One would suppose it to be easy to isolate, describe, and define the basic elements in library building planning, but I find it impossible to do this so long as one thinks of library buildings as of a single type. On the other hand, as soon as one realizes the futility of trying to think about the planning of all types of libraries at once, the problem becomes capable of solution.

Let us remember the fundamental fact that a library is not simply a library, but a particular kind of library, of a specific size and character, serving a specific and unique community, in a specific climate and geographical setting. Libraries, like people, do have elements in common, but their differences are more significant than their similarities. Of course, with respect to furniture, equipment, color, and decorations, these are factors common to all types of libraries, but these things do not make a library building.

Let there be no mistake about this: a library building is a serious work of art, and as a work of art, it is unique and precious and not to be thought of in the collective sense. . . . In my discussion of the elements of planning, I shall confine myself to the one kind of library of which my ignorance is the least noticeable – academic libraries in higher education. To be sure, even this category covers a wide variety of libraries: junior college and senior liberal arts college libraries, both within and outside a university; technical libraries; and various kinds of university libraries. Among these I shall concentrate on university and liberal arts college libraries.

What, then, are the main elements in planning such libraries?

The first element is knowledge of the college or university for which the planning is being done. To the layman, one liberal arts college is much like another and one university like all the others, but this is not so.

How do you get to know an institution? First, by reading everything the institution has written about itself, particularly the alumni magazines. Second, by talking to the chief administrative officers and as many members of the faculty as one can. Third, by visiting with students in the coffee shop of the student union. I might even suggest seeking out a wise old Catholic priest who has listened to countless confessions from college students. Fourth, I would test the academic atmosphere of the college by learning its rank in the various national testing services as well as the percentage of its students that go on to graduate work. I would look for special traditions and curricula that emphasize excellence and individual study activities. Then I would examine the curricula. Fifth, I would try to find out, if possible, how and in what direction the institution may be moving, even though it may not be conscious of these trends itself.

The sixth step in getting to know an institution is to interview the campus planning officer or committee to learn what they have in mind for the physical evolution of the campus and for its future growth patterns. Seventh, I would look up some of the senior or retired members of the faculty in the hope that they could tell me how the fundamental traditions of the college are changing. Eighth, I would meet with the librarians and the library planning committee to find out what they know about the college's or university's needs and character.

The second element is architecture. During the past twenty years, I have worked in varying degrees of intimacy with more than fifty different architectural firms. Naturally, architects differ in their tastes, working habits, and degrees of sensitivity and ability, but I will say that their level of ability is uniformly higher than that in the library or teaching professions. Architects are all well trained and many are well educated. Some can produce buildings of great beauty; others can produce buildings that may not be outstandingly beautiful, but that do serve their purpose well.

Architects have two other qualities in common: first, they expect the client to give them a written program stating exactly what is wanted; second, very few follow the old stereotyped notion that a building is planned from the outside in. Most architects have taken it for granted that their job is to design a building in which certain activities are to be carried on and that the exterior shape and design will be an expression of those activities. In my experience, only two architects started with an exterior design and then expected the librarian to make a library of the structure if he could.

Of course, the recent trend toward total planning of the campus may at times result in dogmas and Procrustean beds based on unproved assumptions. If, for example, the campus planning architects have proposed a

Photo Zimbel

formal pattern of campus buildings, along classical lines, it may turn out that, to fit the pattern, the library style would be wrong so far as its shape and fenestration are concerned. Again, it has happened that a library was located at a certain place to meet the needs of an over-all campus design pattern without regard to the fact that the particular site would require multiple entrances. However, these situations are rare and generally a violation of the principles of good campus planning. The best architects are concerned with deeper and more subtle harmonies among buildings than with mere surface similarities.

Architects do differ in their ability to get the most out of a building dollar, but one should be wary of quick generalizations. You may be getting exactly what you are paying for, but on the other hand, you may not, even if you know what you're getting. The economies of design and construction cannot be measured by the square-foot costs announced in the library journals when the building is new. Perhaps, as with automobiles, it isn't the miles per gallon you get, but the size of your garage bills that determines true economy. Moreover, at the end of the normal twenty-five-year life span of an academic library building, the question of how useful the building will be for other functions may be worth considering. Nevertheless, when all things have been considered, it still remains true that architects differ in their ability to stretch the dollar.

If I were to be critical of architects – and I am under no mandate to be critical – it would be for their habit of following fashions and fads and for confusing their ability, in a technical sense, to *do* certain things with the *appropriateness* of doing them. I refer to such things as glass walls. Personally, I am particularly conscious of glass walls because in Colorado the sun shines brightly and the winds sometimes blow hard from the west. Most Colorado people live on the eastern slopes, which means that the best views of the mountains are on the western side of our buildings. So there is, you see, a conflict. If, for example, you have seen the Air Force Academy Library at Colorado Springs, you will recall the worst possible example of the use of glass walls. Recently, I visited a campus where the faculty had pasted wrapping paper and aluminum foil sheets on their windows so they could avoid being parboiled and blinded.

So what do architects do? They cover up their glass walls with screens of one kind or another. I believe it was Charles Stone who started this idea. By analogy, I have read that in the Middle Ages people either didn't want to or couldn't take baths and so they doused themselves with perfume.

In a recent discussion, a friend in the East defended his east wall, in spite of glare and heat, on the grounds that it opened up the one remaining nice view on the campus. I argued that a landscape view is like that of a woman. A full view of a nude female has much less sex appeal than a view in which she is artfully revealed and concealed.

The third element is the librarian's level of planning knowledge. Frankly, in planning, I am less happy about librarians than I am about architects. It is not that we are so stupid or badly educated and trained, but that we happen to be practising librarianship at a time when we must make our decisions on the basis of information we don't have and can't get.

Those of us who are experienced in library building planning know that a great deal of knowledge and experience is required. Yet most librarians will probably never have to *repeat* the experience of planning a library building. To pose a rhetorical question, is it wise for the librarian to devote a couple of years to learning something he may never use again? Wouldn't it be better for us to spend this time on other things, such as reading books or learning about computers?

What really worries me about librarians as an element in planning is our inability to write programs that tell the architect in words and figures everything he needs to know about the building. It is really quite difficult for anyone to know an institution fully, as was made clear in the discussion above.

2 *Photo Zimbel*

It takes time and effort. One of the reasons is simply that no one, literally no one, can guess correctly about future developments. For example, in the 1930's, no one could predict how rapidly the birth rate would rise; no one realized that world events would cause us to focus attention on the Near East, the Far East, and Africa.

What are the future implications of our current excitement about the quality of education? Will we send two thirds of our students home? What will television teaching do to study habits? Will universities stop teaching introductory remedial courses in all basic subjects? What is happening to professional schools? And so on. No one knows the answers to these and many other questions, and yet they should be anticipated in the planning program for the library building.

Of course, although we don't like to admit it, we really don't know much about the basic problem of book storage. One has only to read the study, *Patterns in the Use of Books in Large Research Libraries*, by Herman H. Fussler and Julian L. Simon, to know that if we had the time and money to make the preliminary studies, it would be possible to send many of our books to dead (and therefore cheaper) storage without causing too much annoyance to scholars. But then one could argue that such

2
Strong light and shade contrasts are injurious to the eyes.
Le contrast d'une lumière forte avec l'ombre aveugle les yeux.
3
Variety of volumetric content clearly manifested outside; response to change in aspect: North and South elevations of Saskatoon Public Library; Webster, Forester, Scott & Associates, architects.
La variété du contenu des volumes se manifeste déjà de l'extérieur. Façades du nord et sud de la Bibliothèque Municipale de Saskatoon.

disposition would destroy the concept of the research library.

A still more critical question is that of knowing how to evaluate the influence of miniaturization and electronic transmission systems. In a news story in the March 27, 1961, issue of the *New York Times*, Professor John G. Kemeny, of the mathematics department of Dartmouth, proposed the creation of a huge national research library that scholars would consult by an automatic long-distance dial system. Professor Kemeny said that such a library could be assembled in twenty years at a cost of less than a billion dollars. The material would be stored on tapes on which one ordinary book page would occupy about one square millimeter. Thus, more than 265 pages could be stored on a square inch of tape. Instead of using the traditional card catalog, a scholar would find the volume or article he sought by using a device equivalent to a telephone dial system. Library users would not borrow books in the present-day sense, but would receive copies of the appropriate taped information through the cable system to the display and recording equipment at their own institutions.

Who is to say that this cannot or will not be done? And if it did happen, would there not be an effect on the kind of library a large university would plan? However, when we face this question, all we librarians can say is, "Well, it could, and probably will happen, but we don't dare count on it."

The fourth element is the political position of the client. In theory, the client is the codification of the first element, but that is not what I have in mind here. I refer to the desires and idiosyncrasies of the key person with whom you have to deal. In a university, it is usually the president, or someone on the board of trustees, or, in the case of private institutions, it may be the donor. I know of one university in which the donor's wishes were such that the resulting building left much to be desired.

In a paper of this kind, it will be sufficient to say that, whenever you encounter a situation in which the client's wishes run counter to logic and good sense, you do the best you can and that's that.

The fifth element is the budget of the client. If, after the program has been completed and quantified, it turns out that sufficient funds are available, there is no problem. But when the opposite is true, obviously something must be done. It is not the purpose of this paper to prescribe remedies, but typical solutions to this problem might be mentioned: (1) ask an outside expert to review the building plans to see if different solutions can be found; (2) lower the quality of the building, *ie* substitute cheaper materials; (3) reduce the size of the building; (4) postpone some of the costs by reducing the areas to be constructed to the bare necessities; (5) postpone the purchase of some of the equipment and furniture; (6) temporarily house some nonlibrary function in the library and thus transfer some of the costs to another project; and (7) raise more money. The last solution will be the most satisfactory, from the point of view of the architects and the planners, although the client may be expected to feel otherwise.

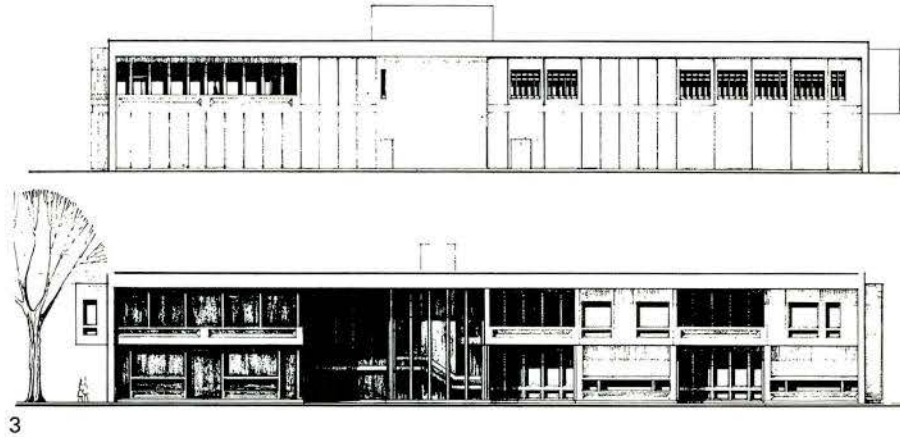
The sixth element is the geography of the campus, which has a bearing on the question of the proper site. Good over-all campus planning is quite new, although there are examples to be found of good early work. On my own campus, as an instance, Charles Z. Clauder in 1919 developed a complete campus plan with scaled models. The entire University of Chicago campus was deliberately planned. In contrast, some universities – Michigan, Harvard, Iowa, Columbia, and Illinois – appear to have just grown that way.

Today, there are . . . (architects and planners) . . . who know how to find the kind of information outlined in the first element of planning and who know how to utilize space so that the proper relationships among buildings will exist; so that future planning needs are foreseen; so that beauty is present; and so that communication and transportation needs are met.

. . . These firms seem to know where a library should be put, how to orient it in relation to other buildings, and how to allocate space for future growth. By extension, I would guess that all well-trained architects know quite a lot about this subject.

The essential point is that each campus problem is unique; you cannot explore around the country and simply adopt other people's ideas and solutions for your own problems. Nor should you be critical of what might seem to be unusual solutions until you fully understand what the real problem was.

For example, the April 15, 1961, issue of the *Cornell University Alumni* carried a series of articles on the new Cornell Library and a photograph which shows a formidable



3

4
Elken & Becksted, Architects
Eatonville Branch Library Etobicoke – a pleasant outdoor reading court associated with the building.
Une charmante cour à lecture en plein air, associée au bâtiment.

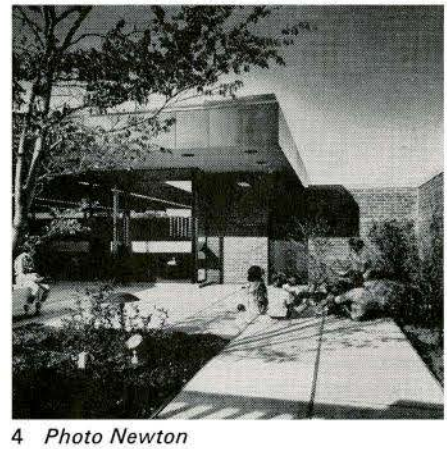
outside stairway leading to the library. Anyone who knows Upper New York weather must shudder when he contemplates the problems this stairway will cause but, nevertheless, I feel sure that it was not placed there without a great deal of thought and that, in the end, it was found to be necessary.

At the same time, you should not be overly impressed by campus planners. They are rather new at the game and they certainly are not infallible. There are times when it is wise to sacrifice a space principle in order to gain an academic value. However, the better planners know this and the better they are, the less rigid and dogmatic they will be in approaching a given problem.

The seventh, and last, element is the program. There has been quite a bit said about programs in recent years. I would point out first that, in the past, many libraries have been built that were full of mistakes; we tend to blame the architects for these errors, and rightly so, but I would suggest that more blame be put on the client than we have in the past. This is because you will find in most cases that the client did not have a clearly expressed statement of his desires and needs to provide for the architect.

For this is what the program is: It is a complete written statement of what the client wants and does not want. It should be written by the client before the architect appears on the scene. The architect should study the program and then, if he thinks there are statements in the program with which he disagrees or that he cannot accept, he should put his views in writing, and these should then be discussed with the client's representatives. The final decisions can then be put in writing and signed by the client and the architect.

No important points should be omitted from the written document and left simply in the form of oral statements. Some clients and some architects may dislike this rule, but experience demonstrates that it pays to be careful. This is particularly true if the architect is a large, diversified firm located at some



4 *Photo Newton*

distance from the client.

One of the major problems of program writing for colleges and universities today is that the technology of learning is changing so rapidly (and is threatening to change even more radically) that we no longer can feel certain about any aspect of planning.

Those of you who have seen the Trump Report, or who have read the reports of the Educational Facilities Laboratories, Inc., will realize the magnitude of the ideas that are fermenting in elementary and secondary school building planning. To be sure, the schools are at least two decades behind the thinking on educational methods to be found in colleges and universities; but that is to be expected, because schools have been run by trained experts and colleges and universities by educated amateurs. The point is that if the lower schools ever do put into practice some of the new ideas, the graduates of these schools will come to college with learning equipment that will force us to raise our library sights many notches.

Fortunately, many of us have been wrestling with these ideas for years, and we are not afraid of them. We have even gone a long way toward planning libraries that can absorb the new ideas, for, in reality, they are quite simple. They boil down to the themes some of us have been preaching all along: more emphasis on individual study; more emphasis on physical facilities that give the individual learner more privacy; more freedom of access to all learning media; and better ordering of the tools and media of learning. The modular method of planning was developed for these purposes, and after fifteen years of experience we are learning now how to use it.

We have learned in college and university library planning that fixed-function planning is no longer possible. We have not yet learned enough about the right kind of furniture and equipment, nor do we know very much about how to make so-called audio-visual materials properly available for individual use. The audio-visual people tend to think almost exclusively of group use, which means that we must learn more about individual use.

There are other program problems that worry us: for example, the nature and scope of the special facilities for general education. Is the Yale theory better than Harvard's? And if so, why and in what ways? Since few institutions are able to find enough money to build enough buildings to house the 1970 enrollments or enough teachers to teach them, will all the gains made in the direction of individualization be erased? Will teaching by television really make any difference? What will the mushroom growth of the junior college movement do to our senior colleges? These are just a few of the uncertainties.

I have attempted to state and examine briefly the main elements of planning academic libraries, the elements that seem important to me. You may not agree that they are the key factors of concern, but I am certain that a great deal is yet to be learned about all of them.

Ralph E. Ellsworth,
Director of Libraries, Professor of Bibliography, University of Colorado

This article has been reprinted from Planning Library Buildings for Service, published by American Library Association, Chicago, 1964.

Photographs on pages 25, 26, 29, 38 courtesy of Educational Facilities Laboratories, New York.

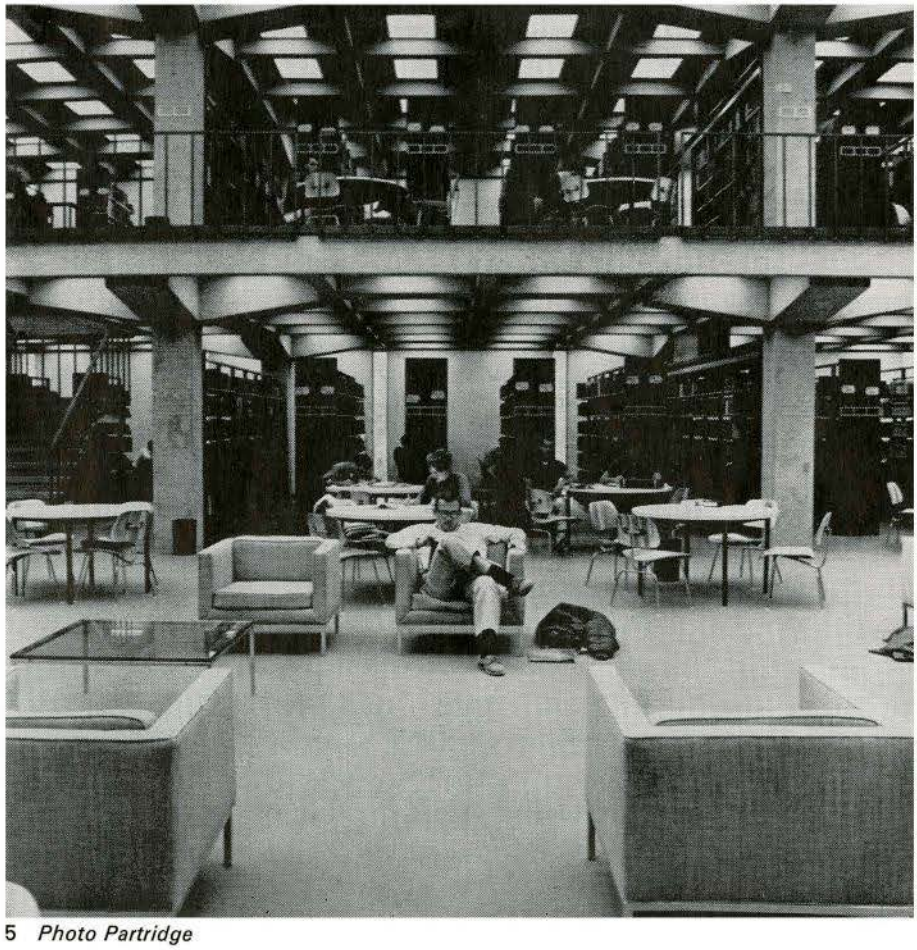
The Canadian University Library

Principles of Function and Design

Modern architecture has not been more heartily welcomed by any professional group than it has by librarians. Modern building techniques and in particular modular construction have made possible a far greater emphasis on the functional aspects of library buildings than was possible with traditional architecture.

A "university library" denotes an administrative organization which may be located in one building, or may have mushroomed into a multifarious system of departmental and branch libraries. The organization may be defined by its objectives: to acquire and store a collection of books and other materials necessary to support the courses and research work of the students and faculty; to provide, in the design of the building and furniture, ease of access to the collection and good conditions for prolonged study; to give expert staff assistance to the library public and to maintain records controlling the loan and location of the items in the collection.

A typical large university library system, upon which many variations are played in Canada, has a main library which contains the bulk of the book collection, an undergraduate or college library for the junior students, and a number of branch libraries each specializing in one subject.



5 *Photo Partridge*

Within the main library building the traditional division of functions into the two broad groups of circulation activities (loans) and reference activities (information) is found in university as in other libraries. Both functions may be found at the same service desk or they may be organized into separate service units.

Traditional systems of library operation are being radically affected by automation and the first impact is usually seen in circulation procedures where automation can reduce space and staff needs. However, when circulation work is combined with other functions the space needs at each service point rise sharply and reach a maximum in the subject divisional type of organization, where the administrative unit is decided by the group of subjects in which services are given. For example, there may be an education division which will circulate the books, give reference service to its borrowers, maintain the records for all types of library materials including periodicals and documents, and may catalogue some of the special education materials.

In a large central university library there may be several service points throughout the building so that the borrower does not have to travel too far before receiving staff assistance. The service points have a close functional relationship and may need to be connected by a pneumatic tube system in addition to the mandatory telephonic and inter-com. systems. The essential supply line is that of the physical plant which moves the books vertically within the bookstacks. This line may usefully link-up the service points on different floors of the building so that the staff at these points may load and unload the books and control the mechanism. The "demand" nature of the university library operation makes the speedy return of books to their correct location on the

5
High utility and a pleasing environment may not motivate use of the library – but a lack of them may motivate users out of the library. Colorado College Tutt Library.
L'ambiance agréable d'une bibliothèque n'attire pas nécessairement les gens, mais son absence peut les retirer d'y aller.

6
Variety and appropriativeness of change via volume : Regina Public Library, Izumi, Arnott and Sugiyama, Architects.
Variété et changement approprié au moyen du volume : Bibliothèque Municipale à Regina, architectes, Izumi, Arnott et Sugiyama.

shelves a highly important if somewhat mundane function. Enough equipment to handle peak traffic must be provided in the form of small book lifts, elevators for book trucks, or book conveyor belts.

The library staff must be able to produce a book "on demand" or say when it will be returned from loan. It is essential that books should be placed in their correct locations on the shelves as soon as possible after their return to the building. Effective control points must be combined with the exits to guard against accidental removal of books going out of the building without being "charged" in the loan records. The staff should be able to locate any book in the building or in the loan records.

Although the organization of services may be complex, there is a pleasing simplicity about the basic function of a university library. A large collection of books is surrounded by tables and carrels where students and faculty are working steadily with the materials they have found on the shelves. Some of the library staff are helping the students to find and use the material they require. Other library staff are working at the buying and indexing of new materials.

The diversified cultural and recreational activities that are a feature of public library service are not in evidence.

The students and faculty must be able to penetrate into the very heart of the book-stacks easily and speedily. Seating should be provided within the stacks so that the students can use the material near to its shelf location. Stack aisles should be of a width that combines ease of access with economic storage capacity.

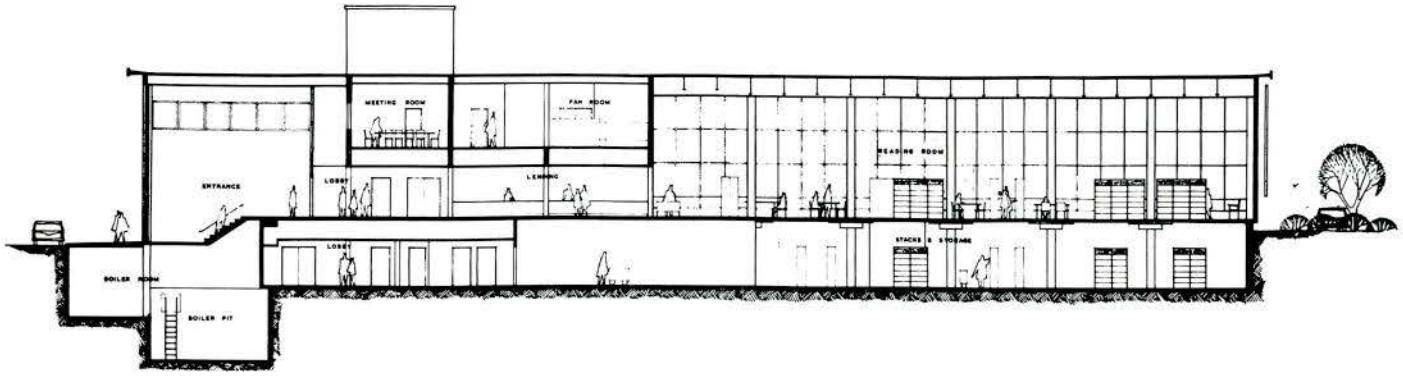
When large research collections are built up, it may be necessary to economize in storage space by creating a "closed stack" which contains research material used by a small minority of the campus population. In this type of stack the ranges of shelves can be more compactly placed together than in book stacks designed for open shelf access.

Carrel seating interspersed among the book stacks breaks up the massive monotony of long rows of shelving, but a word of caution is necessary in that it is possible to overdo the sub-division of the book stacks into small units. Most Canadian university libraries use the Library of Congress classification scheme in which the subject order greatly facilitates the use of the stacks by the library public. It is tempting, when the building is first occupied, to arrange the stacks in groups of various capacities corresponding to the number of books in each subject field. This arrangement inevitably breaks down within a year or two. The bookstock grows rapidly but unevenly and subjects quickly spread beyond their allotted bounds. The core stack for the major part of the collection should be designed as a unit and should allow for continual movement of the subject sections of the books within the stacks. At any stage of growth the stack structure must allow for an easy apprehension of the logical order of the books within the stacks.

A very different type of accommodation is provided in the unsupervised reading room, furnished with tables and carrels but no books of any kind, where the student may work on his essays and study his lecture notes. This type of accommodation is not necessarily a library function, but is usually provided in the library building. It should be planned so that the room can be shut-off from the rest of the library and left open for long hours without staff supervision.

One of the most significant features of a university library is that it is in effect a working laboratory and the persons using it are often in the building for several hours at a stretch. There should, therefore, be generous provision of washrooms, smoking and lounge areas, and probably a coffee and lunchroom.

The university library has the same function as other libraries in ordering, receiving and cataloguing the library material, but with



6

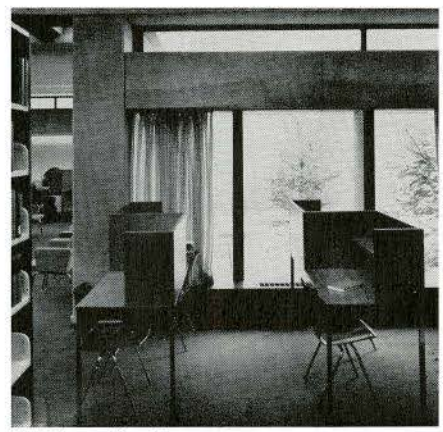
7
Study carrels, Steacie Science Library
Gordon S. Adamson & Associates, John B. Parkin Associates, Shore & Moffat & Partners Architects.
Pupitres dans la bibliothèque Scientifique Steacie.
8
Open plan reference section with photo copying instrument.
Highlands Branch Library, Edmonton
Richards, Beretti & Jellinek Architects
Section ouverte de référence avec machine à photocopier.

proportionately a much larger number of staff due to the large quantities of foreign language and abstruse material received. The books, the periodicals, the furniture and equipment flow into the library building in ever increasing quantities year after year. These receiving activities are most usefully related spatially to the book order department. In addition to materials received, books are flowing out of the library in various services to other libraries and to the branch libraries and teaching departments on the campus. A spacious receiving and despatching area must be provided with good access for motor transport.

Any library will stress the importance of the catalogue because this is the key which enables the public to survey the contents of the library quickly and efficiently, but the university library is exceptional in the heavy use made of the catalogue by its library public. The catalogue is an important research tool; the students, faculty and library staff spend long periods of time using the catalogue drawers in the main card catalogue lobby. Tables are needed at which persons may sit and work, in addition to the standing-height tables for quick consultation. The catalogue is one of the main crossroads of library traffic and for this reason is often placed in a central position on the main floor.

Continuing change and continuing expansion characterize the situation in which Canadian university buildings are now being planned. There is no doubt that Canadian universities will continue to expand rapidly over the next ten years and probably for a much longer period. In looking at the day-to-day functions of the library the effect of this situation is seen in an emphasis on flexibility.

The library interior should be like a warehouse – a vast area of free space in which furniture and temporary partitions can be moved about at will. The look of the place should not dominate design. *The people who use a university want a library which is as functionally efficient as a battleship.* Permanent constructional features such as stairways and elevators should be placed



7 *Photo Panda*

8 *Photo McDermid*

on or near to the exterior walls. The dimensions of the building module should enable the standard size of book stacks to be placed between columns in either direction. The light intensity should be greater than is usually recommended in the textbooks. 75-foot candles at table-top level throughout the building is a good intensity in this country of bright sunlight and bright snow. Reading tables should be as steady as a rock (not always easily achieved with steel furniture) and should provide a 3' x 2' table-top space for each student. Carrel-tables should be supplied in abundance. Particularly useful are carrels interspersed among the book stacks. Office partitions should either be installed as moveable partitions or should be of a type which can be easily and inexpensively dismantled. Special types of library furniture (for example service desks) should be of unit construction so that units can be interchanged and moved from one floor to another or added to an existing desk to provide for an indefinite degree of expansion and modification.

At the end of the day some students pack their books and head for the checkpoint and the exit. Other students stay on all through the evening – possibly up to midnight. Many of them have too many books at their carrel tables to carry home, but in any case the library should be preferred because the colors, the lighting, the furniture and the temperature control should be more conducive to study than the university residence, the boarding house, or even the home. The creation of an atmosphere of comfortable studiousness is a building function of no small importance. University studies demand an intense concentration which heightens the sensitivity of the individual to anything which obtrudes; this applies not only to the atmosphere in the aesthetic sense but even more to the atmosphere in the physical sense. If the architect can combine visual attractiveness with good air circulation and good heat control he will have gone a long way to making the university library function happily.

This brief account of function has shown only the peak of the iceberg. Much remains hidden and the characteristic nature of the hidden mass of library organization lies in the increasingly specialized and detailed nature of modern library techniques.

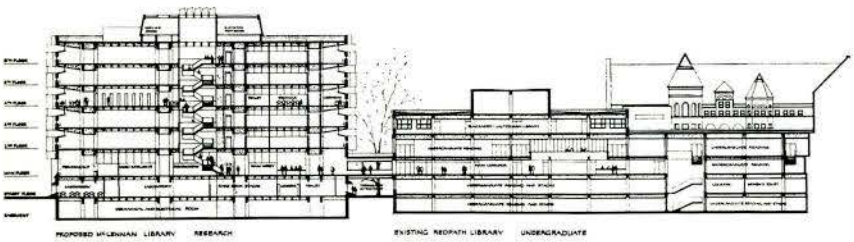
Libraries are highly specialized buildings where every building feature can help or hinder a library function. However, as each library organization is unique, the local library staff are the final arbiters of the pattern and shape of their library operation.

Sidney Harland
Assistant Librarian
University of Alberta

McGill University
McLennan Library
Redpath Library

Architects: Dobush Stewart Bourke

9
Section
Coupe
10
Main floor plan
Plan du rez-de-chaussée
11
Second floor plan
Plan du 2e étage
12
Model
Modèle



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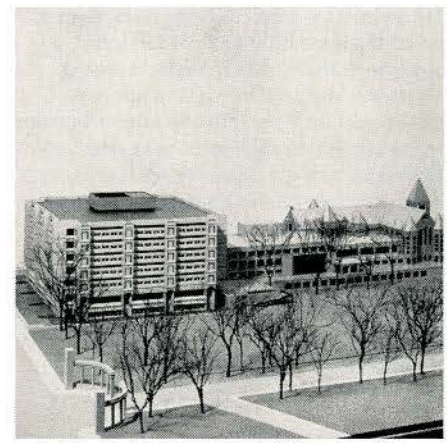

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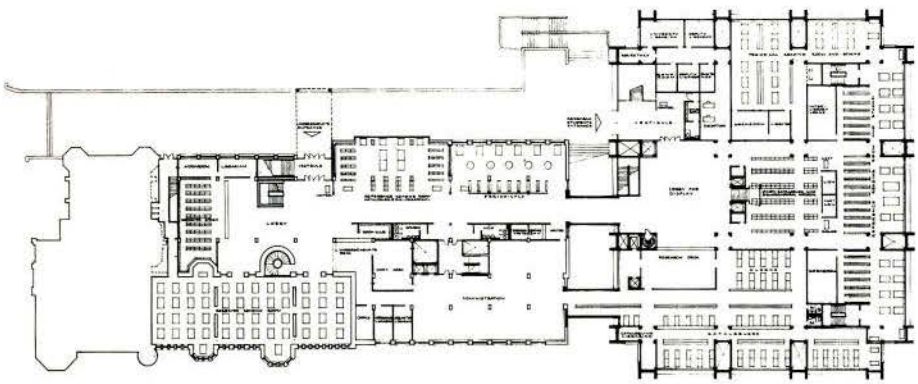

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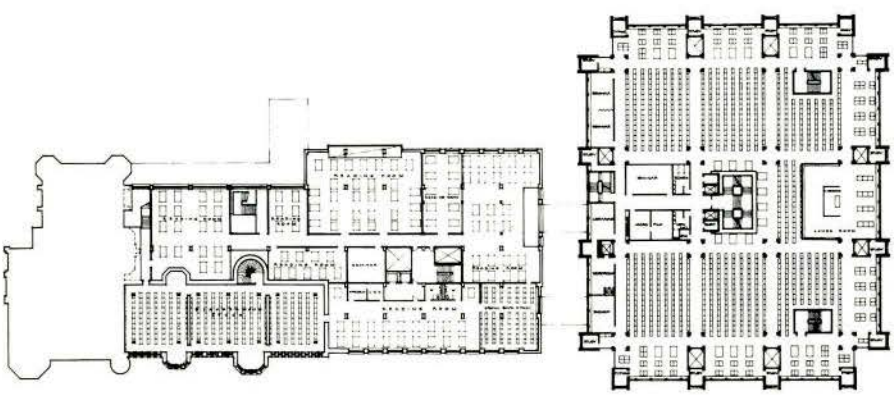


11

The program comprises the construction of the new seven-storey McLennan Library and the renovation of the present Redpath Library. The McLennan Library, primarily to serve honor and graduate students and staff, will contain on five floors research library stacks and reading areas seating 1,500; on the main floor the circulation and administrative functions, and at street level, the Library School and rare books area. The undergraduate Redpath Library will contain stacks, reading areas for 1,500, administrative areas, the enlarged Blacker-Wood and Blackader-Lauterman Libraries and the deposit collection of the research library. The two buildings will be connected to function as a single complex. There will be separate entrances, coatroom and student facilities for each library and the Library School.

Vertical circulation in the McLennan Library will be by elevators and stairs for both staff and students. In the Redpath Library elevators will be reserved for staff. Both buildings will function on the *open stack* principle with control exercised at the entrances only. Small reading rooms will be located near the bookstacks. The McLennan Library will be constructed of reinforced concrete. Carpeting will be used throughout reading and stack areas in both buildings. Air-conditioning equipment for the two buildings will be located in the basement of the McLennan Library.

Planning Academic Libraries

The architect who becomes involved in planning an academic library should have two recent books which, taken together, cover the subject very well. I shall describe them briefly and then add a few pointers from my own experience.

The first book, and the more general, is Anthony Thompson's *Library Buildings of Britain and Europe*, published in London by Butterworths in 1963. Thompson is a librarian with varied experience in academic and special libraries, including five years in RIBA library. The Introduction acknowledges advice and assistance from an architect, but the book is largely the result of Thompson's own observation and study. Part I is a guide to the planning process and a summary of requirements and problems relating to libraries of all kinds. Part 2 begins with a brief outline of the history of library buildings, extremely useful as background and perspective. The balance of Part 2, practically three-quarters of the whole book, is devoted to descriptions of more than sixty buildings of the last fifty years: national libraries, public libraries of various types, libraries of educational institutions including universities, and storage libraries. Descriptions include many floor plans, tabular summaries, and photographs of buildings mainly English and European but including some North American. These descriptions might have been more interesting if they had been less numerous and more critical, but are still useful. The really important part of the book is the first quarter, and it is a good introduction to library planning.

The other book is Keyes *Metcalf's Planning Academic and Research Library Buildings*, published by McGraw-Hill in 1965. As librarian of Harvard University Metcalf helped plan three new buildings which are widely known as models of their kind; since his retirement from Harvard in 1955 he has served as building consultant to more than 250 libraries on six continents. The Introduction acknowledges the advice of an architect and of various librarians (the publication was sponsored by two associations of librarians and financed by a foundation) but the text is obviously Metcalf's own.

This book is narrower in scope than Thompson's, and it differs also in that its point-of-view is mainly American and contemporary. The main difference, however, is that Metcalf's book is a full and detailed presentation of its subject. The first half of the book is an encyclopedic treatment of basic information, with full exposition of problems and solutions and alternatives, along with comparison of the costs implied for construction and operation. The second half is a detailed account of the planning process from preliminary speculation to dedication ceremony and early operation. This part should be read not only by the architect but by all who deal with him on the planning of the building.

Various appendices include a glossary and annotated bibliography.

For the architect the process of planning an academic library involves several different interests and is as complicated as the planning of any other academic building, only more so. It must be related to the institution's geography and physiognomy, should, of course, require the active participation of the librarian who is to be responsible for operation of the building, and should make use of the specialized knowledge of his senior assistants and heads of departments.

The library committee usually includes also a number of professors from various departments, appointed to represent the future users. As professors they carry great weight in the committee and it is to be hoped they have been appointed for their wisdom, not merely for the vigor of their attacks on the existing library service. For various practical reasons the committee seldom includes students, though probably it should seek the advice of students on some points. Since few members of the committee may have had previous experience in planning a library, a library building consultant may also be involved. There may also be a donor whose wishes have to be taken into account.

If the architect is lucky he will not have to deal with all the people mentioned above, but he should be aware of various and sometimes conflicting interests.

There may be some on the committee who think the library should be rather like a medieval church. Of course there is good historical backing for this view, since the church of the Middle Ages in Europe was the preserver of learning and, in its monasteries and colleges, it did develop a style of library in which book-cases and benches were arranged like pews along an aisle. This design was ideal for libraries which depended on stone-and-timber construction and on daylight; in which the number of readers was small and the books, being handwritten, were few. The design can still be attractive and practical where a similar limitation applies to the number of books and readers, as in the reference room of a college library. Otherwise it has as little relevance to modern needs, as the one monumental room, the great hall timbered and panelled or pillared and frescoed with clerestory light flooding the galleries of books all around the walls.

The "great room" design may still be relevant to rare-book rooms, in which fine books can be exhibited in wall cases and readers can be supervised at flat tables; it may also be adapted to contain the card catalogues and circulation desk which form a reader's approach to the collection, but it is no longer the principal feature of a university library.

Some members of the committee may think of the library as a kind of academic lighthouse, a tower of books. Of course a building may have to have several storeys, but each level should be large enough to house a significant number of books or services: ordinarily about 16,000 square feet should be considered a minimum. Advocates of narrower towers should visit those at Cambridge University or the University of Texas. Some committee members are certain to visualize the new library as a kind of supermarket, with readers having free access to the bookshelves and to study tables interspersed among the ranges of shelving.

13
Informal and formal reading areas. Forest Hill Village Library, Marani, Morris & Allan Architects.
Coins à lecture. Bibliothèque Municipale de Forest Hill, architectes, Marani, Morris et Allan.
14
Lighting in structural grid. Simon Fraser University Library, Robert F. Harrison Architect.
Eclairage au quadrillage structural. Bibliothèque de l'Université Simon Fraser, architecte, Robert F. Harrison.

13 *Photo Harris*

This plan is a logical extension of the medieval plan, adapted to an age of steel and concrete, fluorescent lighting and air conditioning and relatively inexpensive books.

Medieval precautions took the form of pledges on deposit, gates on each alcove to lock the readers in, or chains on the books; without these precautions a modern open-access library suffers to some degree from unavoidable theft, mutilation, and accidental or intentional misplacement. But levels of loss from theft, mutilation or misplacement which may be tolerable in a public library are crippling to an academic library.

The planning committee may have a member or two who visualize the new library as a combination of a telephone exchange, computation centre, and photographic laboratory. Their views are not entirely irrelevant and must be allowed for by a liberal provision of wiring conduits and outlets, and by making the building as flexible and adaptable as possible.

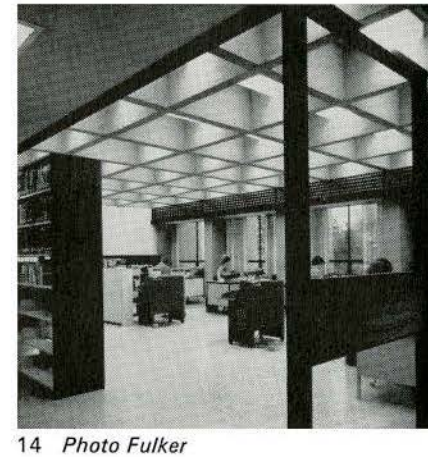
To those committee members whose only concern is about books and readers and aesthetics, and who hold the views indicated above, it may seem that the librarian visualizes the new library as a kind of factory, with broad uninterrupted floor levels, columns spaced to fit into the standard arrangement of 36-inch shelf units in rows 54 inches apart; floors that will bear a loading of 150 pounds everywhere, and extra electrical conduits even in space planned as bookstack. It is he who may insist that the building have only one public entrance with turnstiles or other restrictive controls. It is the librarian who will want to devote apparently unreasonable amounts of floor area to rooms which house neither books nor readers, even if the inclusion of this space costs money which could otherwise be spent on improving the finishes and general appearance of the building.

The librarian, of course, may be the only member of the committee who appreciates the amount of staff work involved in acquiring the books for a university's library system, and the work which goes into cataloguing, organizing, arranging and keeping track. He is the one who knows how much assistance readers need in order to use the library to best advantage, and he is the one who has to find the equivalent of three salaries for every service desk which needs to be staffed by one person over the usual eighty or ninety hours a week.

He knows from experience that the unit cost of acquiring or lending a book goes up as the library grows, and that staff workrooms are nearly always the first part of any library to become overcrowded, and that there is never enough money to staff the library as it should be staffed to do what needs to be done. He knows also that academic book collections go on doubling every few years, and that any stack space provided now will be overflowing all too soon. He knows too of various new developments in library technology, and he sees them as the one hope that he will not have to go on increasing the size of his collections and staff indefinitely. Knowing these things, and having felt the ever-increasing pressure for larger collections and better services, he must press for the maximum amount of usable space. He may seem to other members of the planning committee to be unduly concerned about the efficient use and arrangement of space, but he is the one who must see to these things.

It is to be hoped that the architect, in his first contact with the librarian, will declare his own determination to produce a building which will be truly fitted to its planned function and adaptable to a somewhat uncertain future. If he does this he is certain to discover that the librarian shares this determination, and understands that one of the building's important functions is to please and inspire, as well as to be an efficient instrument for bringing together books and the people who need them.

Robert H. Blackburn
Chief Librarian
University of Toronto

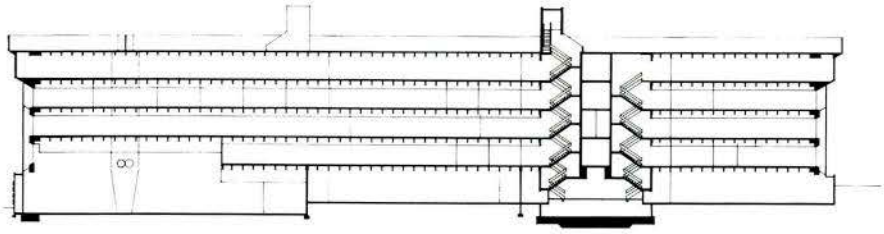


14 *Photo Fulker*

Simon Fraser University Library

Robert F. Harrison Architect

15
Section
Coupe
16
2nd floor plan
plan du 2e étage
17
3rd floor plan
plan du 3e étage



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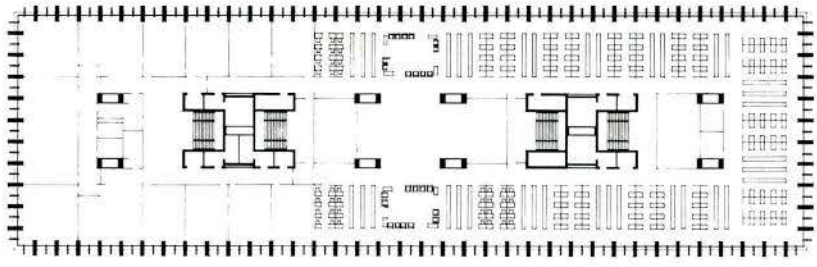

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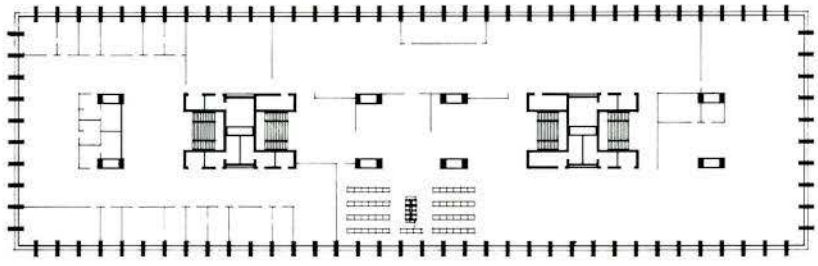

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The library is located in the heart of the university on the north side of the main mall; the building consists of two floors below the mall and two above. At present the administration offices are located in the library building but these will be relocated in new quarters in the near future as space requirements are increased.

Designed to take four more storeys as enrollment increases, the building allows the student as much freedom as possible to study and browse.

The plan is arranged around a central core which contains all the services such as stairs, lavatories, ducts and seminar rooms. Around this core are located book stacks, which are free standing. These stacks are divided with spaces in between for individual study carrels, giving privacy, sound control and easy access to books. There are 620 study carrels throughout the library for students and faculty.

The top floor, not yet completed, will be used for library book reference and faculty study. The exterior walls are designed with alcoves which are to be faculty study areas.

Architectural theme of the building is related to the whole university complex in that concrete is the major building material.

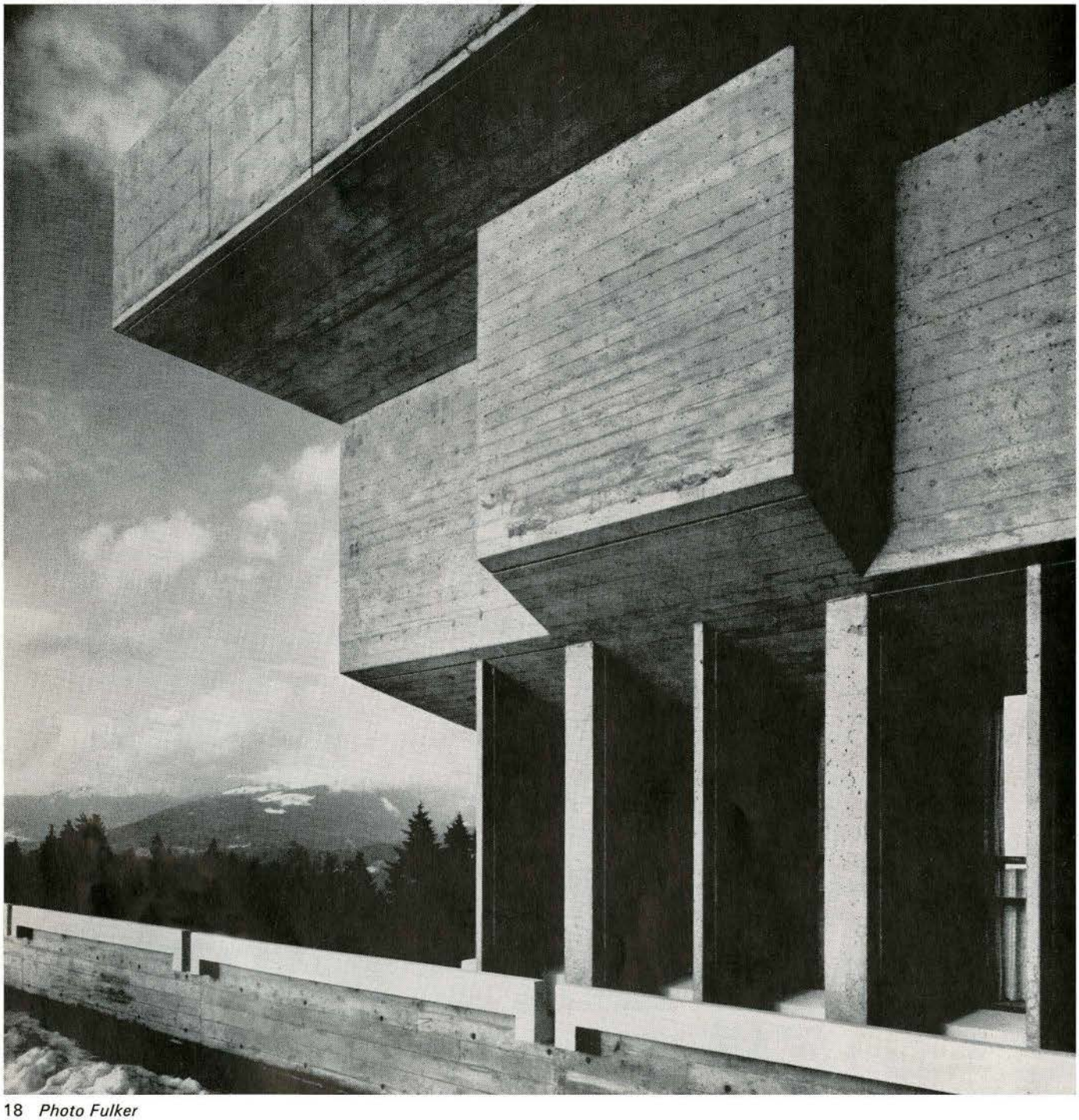
The outside columns carry through to the interior. The ceiling areas over the stacks are four by four feet reinforced concrete waffle structural system. This ceiling structure allows for a clear span and is of exposed concrete that has been sand blasted.

Presently offering 30,000 volumes, the library is designed for expansion to contain 250,000 volumes.

An area has been allocated in the basement for an audio visual department. From this centre, TV film strips and audio tapes can be transmitted throughout the university.

The library itself has been equipped with under floor ducts so that TV or any audio transmission can be transmitted to the student.

18
Lighting to carrel and general reading spaces.
Eclairage donnant sur pupitres et coins de lecture.



18 *Photo Fulker*

The Library - From Books to Information

I The present library and the problem

The direction of the present development of information control techniques can be anticipated to have a profound effect on the operation of libraries in the future. Computer applications combined with advanced audio visual techniques indicate a very extensive and all pervading influence on the method and the performance of search for information by the inquirer from the information store. The inquirer may expect more accurate information more quickly, the library may become an exchange of information at various levels of specificity, and the book is not likely to remain the only principal carrier medium of information.

The present library is a storehouse of macro-units of information. The organization of this storehouse of books and the organization of the bibliographic information which refers to the book is limited by the present techniques of packaging the information, by the techniques of control of the inventory of information packages, and by the structure and level of specificity of the labels used to characterize and to analyze the information in the book. These shortcomings now can be compensated only by human intervention. It is the library assistant or the librarian who through his individual ingenuity has to unlock the book and to search the contents with a view to satisfying the inquirer's specific needs. Although to a very large extent this service function involves routines which are largely mechanical in their nature, the present storage and control mechanism of the library is not capable of taking over from the librarian the burden of most of the repetitive functions of mechanical nature.

More effective means are being sought to gain access to information in considerably more detail than the present library is capable of rendering. Electronic technology now appears to be capable of offering means to overcome the difficulty inherent in the technology of the printed page as a device for storage and retrieval of information.

The control of *library housekeeping functions* by electronic data processing equipment is a modest beginning of this new technology, and today it is practised by a good number of libraries. Initial success is evident but these applications represent only improvement of some conventional library techniques.

Another type of conventional library function which is presently undergoing attempts of mechanization is control of *bibliographic information* in the form of accessions lists and catalogues. Catalogues of the present day library represent the linking mechanism which has to be used by the inquirer in order to arrive at the address of the item which may contain information of interest to him.

Electronic data processing techniques can significantly extend the conventional services of the library. In particular the on-line operating or reactive computer applications indicate possibilities for improving the weakest points of the present library service: prompt acquisition of required materials, minimum processing cycle preceding the placing of these materials on the shelves of the library, and efficient accounting of the whereabouts of library materials. Such a reactive control system can accept information from many sources simultaneously and respond to the requirements immediately as they are registered[1], and therefore it can not only effect a fuller and more detailed exploitation of the library's own collection than the present techniques permit, but it can also greatly facilitate effective co-operation in the exchange of bibliographic information between libraries.

II Towards the horizon

Computer technology and techniques which permit instantaneous and accurate translation and communication between visual, audible and electronic forms of information can be expected to change the access routes to information radically.[2] As has been the case with all technological developments the full impact of the new technology is not released immediately. The development passes through stages of evolution and only the phases that are about to unfold can be predicted with some measure of accuracy. The general direction only can be indicated for the future that lies beyond the development which has already announced itself through manifestations which employ the new techniques but still follow the customary paths.

Among the principal areas where fundamentally different approaches to information can be expected to emerge are: the volume of the information store, the level of detail to which the stored information can be approached, and the method of access to the information. Implied in these conditions is a principally different organization of the physical carrier of information.

Within the perspective of such expectation it is possible to gauge the effect of these new techniques on the operational and service conditions of the present library.

Books themselves will serve as original source material and will be used for the creation of miniaturized text as well as for physical inspection whenever such is required for inherently valid reasons or otherwise can be readily afforded. The microphotographic copies of the collections of all libraries will constitute an *aggregate collection* of all materials in a region, country, continent or the world. Acquisition of readily unavailable library materials in the conventional printed form will not be any longer a matter of urgency; it will become a matter of luxury. The communication facility will produce when required on display unit the needed information as quickly and effectively from a microphotographic source located in another country as it would retrieve it from the microcollection stored several dozen feet away.

The new technology will also be expected to provide access to information to much *more specific levels* than any present library system can offer. The microphotographed text will be transformed into electronic form as required, and complex machine techniques will scan this text for the required information. Constituted according

19
Microfilm Reader

19 *Photo Pallas*

to the inquirer's specifications the required information will be displayed instantly. The information package will thus be dissolved and its contents treated as information in its unending complexity of context rather than as information encapsuled in the book. Not only does this imply access through a greatly extended number of labels that can be assigned to the packages of information as well as to the integral parts of these packages, but it also implies access to the information in detail down to the level of text statements or at least small sections of the text.

Moreover, the access to the information package will be integrated with access to the information itself. This is to say that from an access point on any given level it will be possible to refer to the next more specific or more general level.

Such almost dream-like future technological developments nevertheless appear to be within the limits of reasonable expectation. Research in optical logic elements, superconductivity, and multidimensional molecular structure replication indicates that methods of replication of signals may yet take fundamentally different approaches from the present semi-conductor electronics.[3] More sophisticated communication of signals than the bistate condition of electrically positive or negative conformation is conceivable. Recent research indicates that molecular or functional devices employing the basic interactions between energy and matter can perform system functions producing a simpler and more powerful effect than electronic circuit devices.

These developments are likely to result in machinery quite different from present day digital computers: smaller, simpler in structure, virtually limitless in their capacity, faster and much more flexible than the mid-century mechanisms. Such machinery would permit much more powerful and flexible control of detailed information elements, speed of their transfer, and their conceptual association.

III Some imminent considerations

The new technology will permit use of information the form and level of which can be selected to suit individual requirements. The inquirer, unless he wants to consult books, will not be required to visit the library. The access to the entire range of required reference tools will be available to him from his desk. In terms of library service functions this development implies *decentralization*. For reasons of economy and intermediate feasibility this decentralization of service functions can be expected to evolve gradually. The presently noted progressive decentralization of library service in scientific fields may be reflected in other fields of knowledge, in particular in those which depend on empirical and quantitative information. Social sciences can be considered to be an early candidate.

The refined tools of information transfer can also be expected to facilitate extended *self service*. Many information services which presently can be rendered only by personnel will become available to the inquirer as a result of his personal use of the reactive retrieval instrument which along with the initial general response to his problem will instruct the inquirer which other related aspects he could explore. These leads received through the retrieval instrument will direct him to the required information. The inquirer will have a choice of calling for the book to be delivered to him, scanning the appropriate pages on the screen of the instrument, or obtaining a reproduction of the desired information in hard copy text form for his own exclusive use.

The information retrieval *instrument* is expected to evolve from the present library catalogues which will grow increasingly omniscient and omnipresent. It will know and control not only books but gradually also information in books and in other forms. The instrument can be expected to assume the versatility of the telephone system through which one can consult not only information registered in the local system, but also information registered in related systems. The instrument will eventually respond to human tactile, visual and audio communication. Keyboard, videoscreen, microphone, loudspeaker and a communication dial are the basic external features of this inquiry and retrieval instrument.[4]

Such inquiry stations will be located in the central service areas of the library as well as in selected remote locations served by the library. Similar equipment will be used for augmenting the library's store of information. Processes of selection, acquisition and enregistering of library materials will be tied in a system combining bibliographic control and information storage. This system like a telephone exchange will connect every inquiry desk with the information store of the library. It will also be able to connect the inquirer with similar systems in other

[1] A pilot project applied to the control of journal literature in a well defined subject area is described by Kessler, M. M. "The MIT Technical Information Project". *Physics Today*, v. 18, no. 3 March, 1965, p. 28–36.

[2] There are two principal works which have stimulated the imagination while keeping this vision within the bounds of conceivable reality: Vannevar Bush's Article "As We May Think". *Atlantic Monthly*, v. 176, no. 7, July, 1945, p. 101–108; and, J. C. R. Licklider's *Libraries of the Future*. Cambridge, Mass., The MIT Press, 1965.

[3] Cf. Baker, W. O. "Communications Science – Today and Tomorrow" *Science and Society : A symposium*. Rochester, Xerox Corp., 1965, p. 93–125.

[4] For a vivid exposition of the basic design of such console concept cf. Swanson, Don R. "Dialogues with a catalog". *Library Quarterly*, v. 34, no. 1, January, 1964. A limited practical application of this concept was designed for the Grand Valley State College near Grand Rapids, Michigan, by Sol Cornberg ; cf. Toffler, Alvin. "Libraries", Educational Facilities Laboratories. *Bricks and Mortarboard college planning and building*. New York, 1964, p. 86. Cf. also McCormick, Bruce H. *Design for an Automated Library*. Department of Computer Science, University of Illinois, Urbana, Ill., 1965.

[5] Myers, Wilbur C. "*Photochromic Micro-Image*. A new technique for Data Recording and Data Dissemination" presented at the Society of Photo-Optical Instrumentation Engineers (SPIE) and Society of Information Display (SID) joint workshop on *New Technologies in Data Recording and Data Display*, Los Angeles, Calif., June 1–2, 1964.

institutions participating in the information exchange arrangement. The inquirer having exhausted the local library's store will be able to transfer his search to other similar institutions, from which, if his search is successful, he will be able to receive a photo-reproduction of the desired item by mail if not by means of facsimile transmission.

This complex mechanism of course is only part of the information retrieval instrument. The familiar indexes, various forms of specialized lists and custom compiled and generated information sources will complement the mechanical devices. Many search requirements will continue to prefer the simplicity and effectiveness of the customary catalogue.

The library collection will undoubtedly continue to comprise *books*. The book is an effective and economical bulk storage medium of information. Not all book materials, however, can be expected to be used for physical consultation to an equal extent. For reasons of efficiency in handling the physical volumes, storage collections will emerge containing materials which are used infrequently. Current reference collections of enlarged scope will account for a large proportion of books in active circulation. The ratio between these two parts of the library's book collection can be expected to shift from larger reference proportions to larger storage proportions due to increase in the aggregate volume of the collection and due to progressively developed mechanized approaches to the information in these materials.

This distinction between storage and current use reference collections involves a further consideration of the positional organization of the materials and the technique of transportation of these materials in the system. The very reasons which underlie the selection of materials for readily available consultation in physical book form argue for open and readily accessible shelving. Classified arrangement in this part of the collection can be used most advantageously, although it should be noted that all presently used classification systems fall short of the flexibility and accessibility required in a large reference collection of several hundred thousand volumes. Since materials of this collection would be extensively used, an efficient system of inventory control and transportation of the required items from the stack to users' stations becomes important. This system will be expected to co-exist with classified open shelf arrangement. The direction in which the answer to the problem of transportation of book materials can be sought is indicated in the bibliophone system of the Delft Technische Hogeschool library, where a call number dialed at the catalogue causes the desired volume to arrive at the lending wicket within two minutes.

The storage collection on the other hand does not require a relative positional (classified) arrangement. The relatively infrequent use of these materials in their physical form and their accessibility for consultation through the mechanized information transfer tools can accept a most economical shelving under conditions most favorable for the preservation of these materials. Fixed position shelving can be acceptable in such a collection, and such treatment facilitates also a relatively easier mechanized transportation of these materials to the lending outlet. The economy of this transportation system is a function of frequency of use of these materials, simplicity of the transportation mechanism and the conditions necessary for preservation of the stored materials.

The collection of the future library will contain a large store of materials in forms other than the printed book. A large amount of materials microphotographed from printed information will be an essential part of library collections.

Microphotography techniques at the present time permit compression ratios that can place a large library collection in a moderate size room. Recent research indicates possible further reduction by a similar factor, permitting a 1000-page volume to be placed on a film not larger than a credit card as well as providing a versatile and erasible recording technique [5]

Library materials accessible under full information control by electronic devices will probably be derived from microphotographic form. The process of coupling micro-photography with digitalization of graphic information can be expected to undergo a somewhat complex evolution. The first stages of this evolution will place under digital control microphotographed information in large units (e.g., pages), while eventually digitalization and storage of the text in detail can be expected.

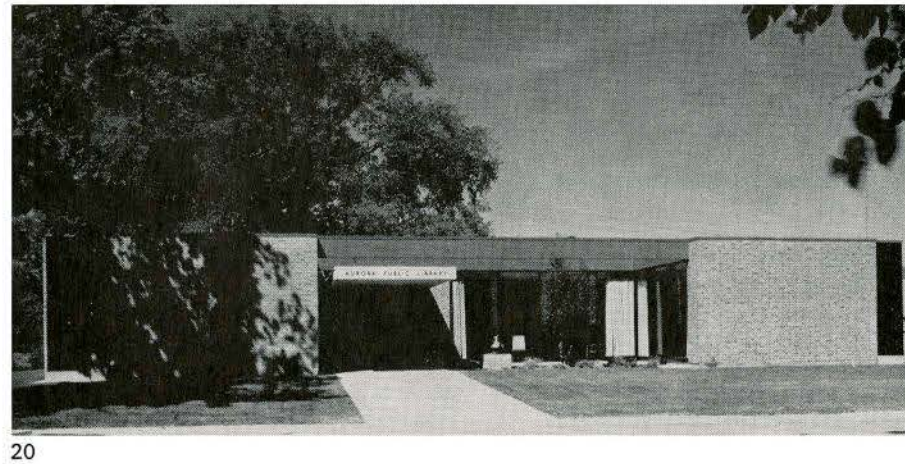
Information in digitalized form will constitute the third principal form of information stored in the library in banks of specialized equipment.

Such implementation brings along the need to provide for various types of equipment which transforms information into digital form which processes and transmits information and which produces a variety of forms of signals meaningful to the human sensory system.

In conclusion, it can be envisioned that the library of the next decade will begin to implement bibliographic control of its customary store of materials to a level considerably more specific than the present day bibliographic control mechanism of the library can attain. It will begin to integrate the various control aspects of this bibliographic level by evolving a control system which will extend the power of the customary catalogue to the point where it will organically and functionally co-exist with the customary index as a single co-ordinated system. This system then will gradually evolve into instantaneously responsive and reactive information environment which will reveal the specific answer in a dialogue with the inquirer. This process will at all times keep the inquirer informed as to how his quest relates to the total extent of relevant information and it will provide the inquirer with a choice of continuing his search into extended depth or of transferring it to another related path.

Aurora Public Library, Irving D. Boigon Associate Architects
Bibliothèque Municipale d'Aurora, architectes Irving D. Boigon Associates
20
East elevation
Façade de l'est
21
West elevation
Façade de l'ouest
22
Plan

This reactive search procedure will be complemented by other more conventional control mechanisms. The customary catalogue will not disappear although its structure and format may undergo substantial evolution. Since the book will remain the basic information unit, processes which administer books will remain in existence although more responsive mechanized techniques will control them. The extension of micro-photoduplication of library resources will be accelerated for two purposes: for expanding the library's collection of readable materials, and for providing the basis for eventual conversion of the text into electronically readable and controlled form.



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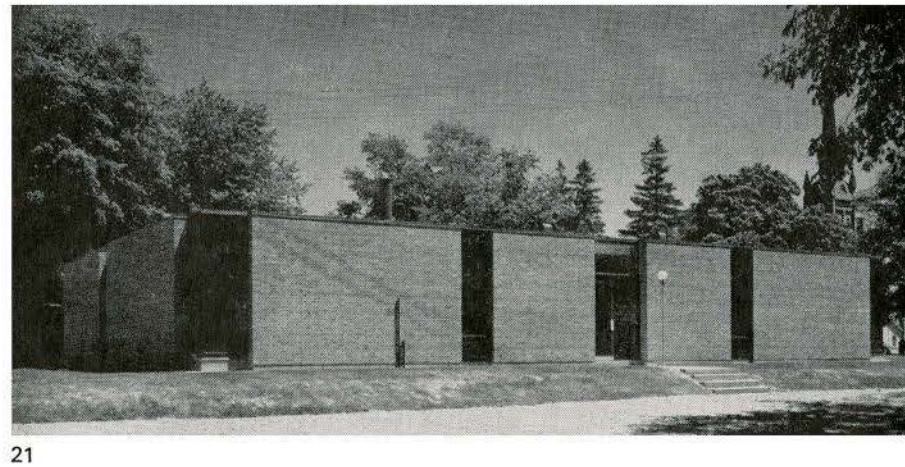
At this point our speculation leaves the realm of calculated projection. Although the technological development applicable to information control seems to indicate trends, and although principally similar developments have taken place in other areas, witness telecommunication, the direction which will emerge in information technology will largely be conditioned by human factors. There may be a point beyond which the human race may not sustain the urge for extension of tools that effectively imitate the thinking process. Theoretically the availability of information in electronic pulse form could lead to direct communication of this information to the human brain without the intermediate conversion into sensory forms. Further knowledge of the functioning of the brain supporting such direct communication may pose a problem more fundamental than the human mind cares to face.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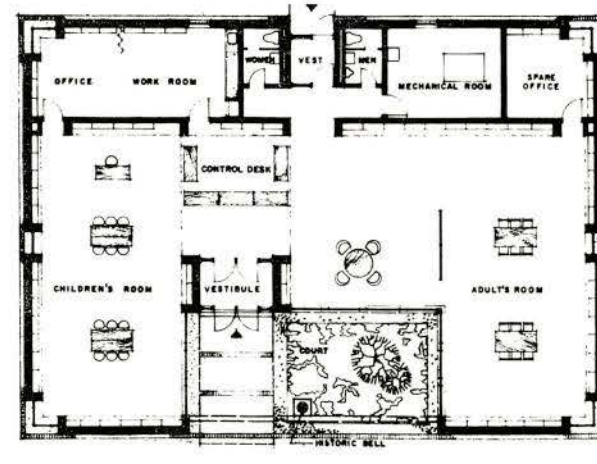
And yet the road in this direction is so long that the quest for information at its most specific level to be available at a touch of a dial will keep fascinating inventive minds for long, and a good deal towards this objective will be achieved before entering the next millennium.



22

Ritvars Bregzis
Assistant Librarian (Technical Services)
University of Toronto Library

Architectural Services

I Project Analysis Phase

A Feasibility Studies

1 Need for library
2 Determination of type
3 Location requirements
4 Financial and procedural strategy
5 Preliminary budget assessment

B Location and Site Studies

1 Survey of locations and sites
2 Land uses and functions
3 Relationship to surroundings
4 Present population to be served
5 Future population trends
6 Relationship to transportation
7 Configuration and shape of site
8 Subsoil conditions
9 Purchase and improvement costs

C Programming of Operations

1 Statement of purpose
2 Systems selection
3 Operational controls
4 Non-book services
5 Community uses – type & frequency
6 Equipment and furnishings
7 Space requirements

D Programming of Building

1 Basic philosophy
2 Site and climate
3 Space requirements
4 Space relationships
5 Environmental controls

E Preparation of Budget

1 Construction costs
2 Professional fees
3 Equipment and furnishings
4 Books
5 Operating costs

It has been said that each question contains half of the answer. Producing a statement of purpose can also serve to invite further analysis. This frequently ignored phase is perhaps the most formative. The library consultant should be used in phase C and to some extent in D.

II Design and Planning Phase

A Operational Design

1 Operational procedures
2 Systems and processes
3 Functional requirements
4 Operational requirements
5 Layout and relationships
6 Equipment and furnishings
a Specifications
b Purchasing
c Installation
d Maintenance

B Building Design

1 Schematic design
2 Preliminary estimates
3 Design development
4 Outline specifications
5 Cost estimates review
6 Working drawings
7 Specifications

C Supporting Services

1 Engineering
2 Landscape
3 Arts and crafts
4 Furnishings and equipment
5 Acoustics
6 Lighting
7 Environmental controls

It is in this phase that the work undertaken in Phase I bears fruit. Needs based on the previous analysis become more obvious; fewer assumptions need be made. Note: words and terms should be clearly defined, for example the word flexibility: does it mean space convertibility or space expandability?

III Construction Phase

A Tenders

1 Conducting tenders
2 Investigating bidders
3 Receiving tenders
4 Advising on bids

B Contract

1 Contract preparation
2 Insurance requirements

C Construction Inspection

1 Progress schedule
2 Payment schedule
3 Certifying of accounts
4 Shop drawings checking
5 Site inspections
6 Guarantees of bonds
7 Furnishings and equipment
8 Architectural graphics

In this business and technology phase of the project problems arise if the architect has only been interested in "aesthetics" and the librarian in "budget and books", changes take place, without complete re-evaluation, consequently the architect and librarian remain mutually disappointed: It probably means the program was not as good as it should have been.

IV Post-Construction Phase

A Guarantee Period

1 Deficiencies clean-up
2 Guarantee inspection
3 Building Use instructions

B General

1 Performance evaluation
2 Maintenance
3 Modifications
4 Improvements

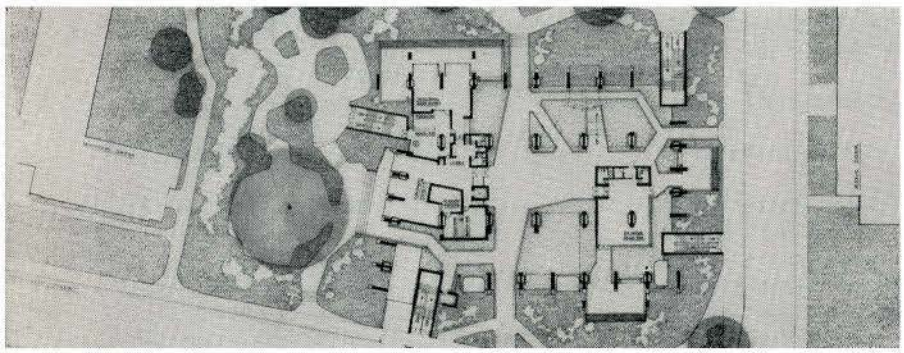
Another commonly neglected phase. In my opinion, the architect ought to be retained in a continuing service, even if it is only on consultation for repainting.

Both the interiors and exteriors of buildings should be physical manifestations of the factors which are important in the program.

Alexander B. Leman

Clark University
Goddard Library
Worcester, Mass.

John M. Johansen, Architect



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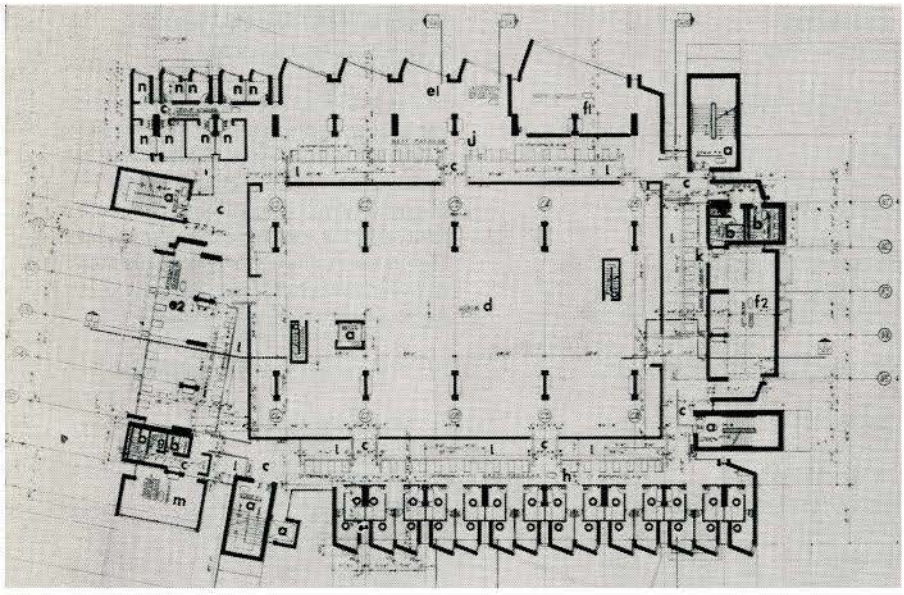

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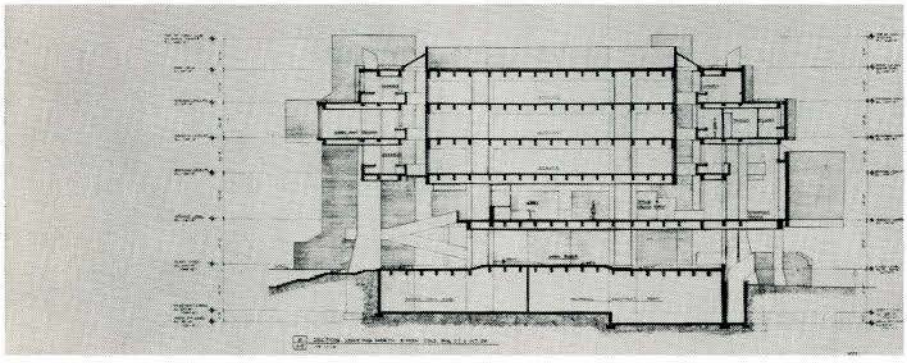

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For Clark University in Worcester, Massachusetts, a library is presently being designed. This building, held up one storey off the ground, stands astride the major pathways of the campus. The structure is reinforced concrete with brick infill to be consistent with all existing and proposed buildings of the campus. Its central position is appropriate in that it serves all departments of education, and is the symbol of academic wealth. From this developed the concept of a central three storey "box of books"; a storehouse, enclosed and protected, around which is arranged, at random, continuous outer structure of reading spaces held up, range upon range, by a separate system of concrete piers. This outer structure is a free assemblage, or a loosely attached cluster of enclosures to accommodate an intricate program for specialized study.

During the course of design, the program was modified and enlarged so there was literally a growth process involving improvisation and change. The building itself expresses the stages in this design process, and in seeing the final form one feels one has come upon the various parts of this building in process of assembly or attachment. In fact the faculty lounge propped on one lofty pier, is shameless after-thought. In biologic terms one might describe this assembly as a concretion or accretion of spaces, enclosures or recesses serving the organism; in this case a human and collective organism; or as varying types of shells of sea organisms attaching themselves at random to a central rock of their own free will. I conceived of the interior spaces as determined by the locus of moving bodies within. Here reference is made to the mathematical definition of locus which is: "the assemblage of all possible positions of generating elements". With this approach then, I am concerned with the human processes of use.

As separate constructions, *ie* central building and the four peripheral buildings with separate foundations systems, the order of structure and building processes are expressed. The shuttering of the glass areas for sun control resulting in four different elevations, evolves

23
Site Plan
Plan d'emplacement
24
Plan
25
Section
Coupe
26
Model
Modèle

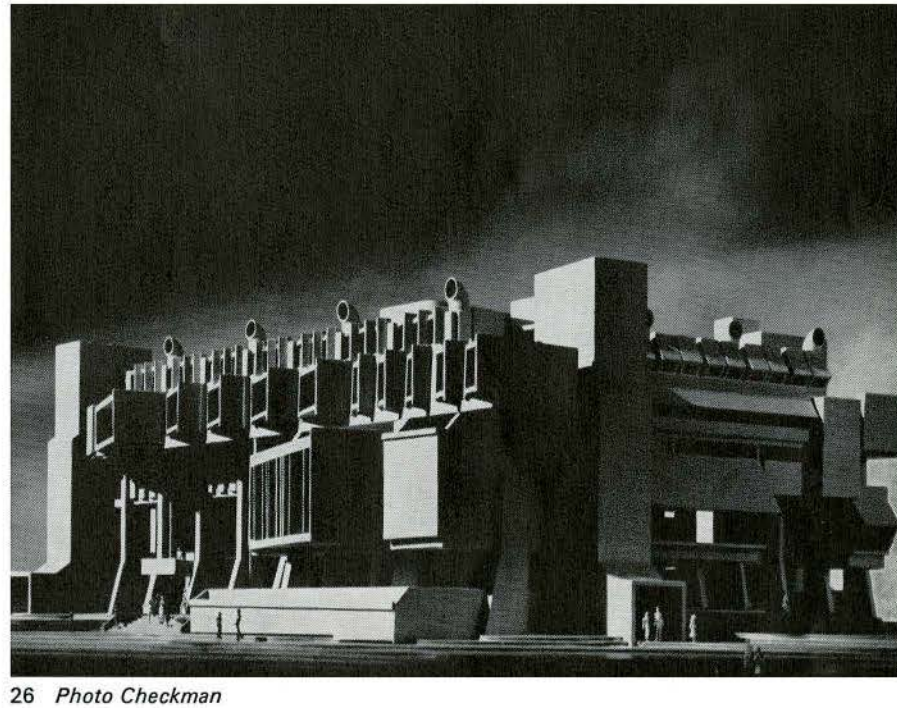
as naturally as a fixed, immobile organism adjusting to the varied conditions of its environment. The very odd and irregular openings between the loose assembly of outer forms is sealed from weather by raw aluminum greenhouse frames scribed to meet the peculiar conditions. Black sheet metal enclosures for the duct system strapped to alternate piers expresses the processes of air-conditioning equipment. In fact all my thinking is in terms of the word "process".

Separating the inner building from the outer structures are continuous light slots, crossed by bridges at each level. These light slots not only make vivid the design concept itself, but provide interior natural light for inner rows of carrels and corridors. At times, the central building or "box of books" will be lit by the sun, while the outer buildings will be silhouetted against it, a reversal of the usual or familiar condition. The elevations are further developed by specialized treatment of spaces for specialized use : micro-film reading is nearly without light, the music listening room has no light controlled for reading, the art room has full skylight, lounges have a view ; all reading areas are protected from direct sun.

I would rather not think of this as a building, but rather an assemblage of components or sub-assemblies plugged into an armature as electronic devices are conceived. In electronics, which is the most influential media of our age following the now passing mechanical age, we think in terms of circuits, patterns, transistors, and tubes which are plugged in, inward directed, and are selected to perform in combination a particular task. Why is this library, as well as being a shelter, not a "cyborg" an extension of the students' eye and mind ? Although the library is not an automation device, which libraries of the near future may be, expressively it has resulted in elevations which are not like the tidy TV cabinet front, but rather the cabinet rear, exposing the electronic components rigged on circuit panels, connected by circulation harnesses to a structural chassis.

These analogies, whether electronic or biologic, I hasten to say were not conscious determinants of architectural form, but were discovered after design was complete. "Science should not be used as a store of eclectic forms, but as a model for understanding."

An awareness of the forces and experiences of one's time is a necessary qualification of the architect. The influences upon his work, however, should operate through his subconscious or by acts of intuition ; while the architectural expression should show itself not in imitation but in principle, idea, and spirit.



26 *Photo Checkman*

In this effort I did not "design", rather I presided and guided the structure as it developed itself ; letting it exercise its growing confidence or will, and assert its purpose.

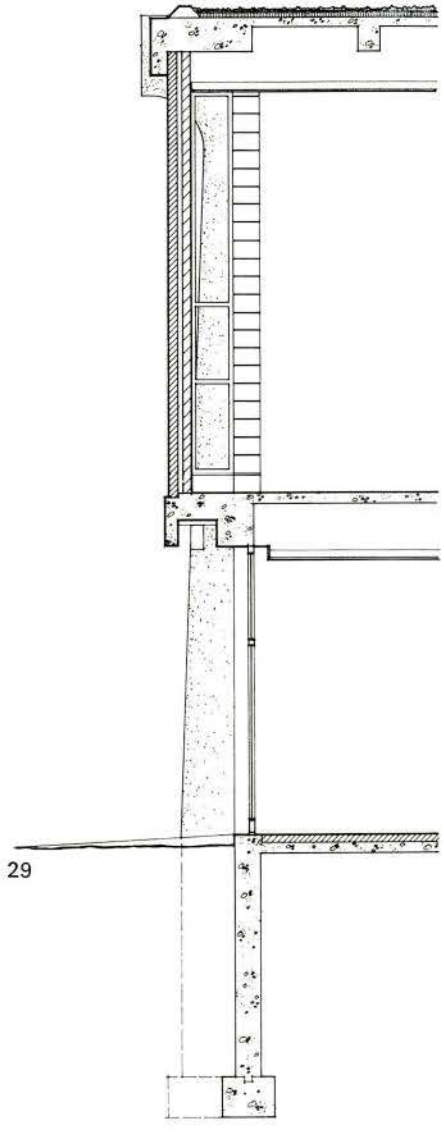
This building does not attempt then to be architecture, a work of fine art, a thing of good taste or beauty. This effort was an attempt to find the nature of, or the essential quality of "Library". This building is simply doing a job, performing, and is representing the processes of human life within. I hope that by truly accommodating these processes, it too may come to life.

Library
St Mary's University
Halifax

C. A. Fowler and Company
Architects and Engineers

27
Facade at night
Façade de nuit
28
Section
Coupe
29
Support and lighting detail, indirect lighting is achieved via breaks between panel and column.
Soutien et détail d'éclairage. L'éclairage indirect est réalisé au moyen d'une brèche entre le panneau et la colonne.

27



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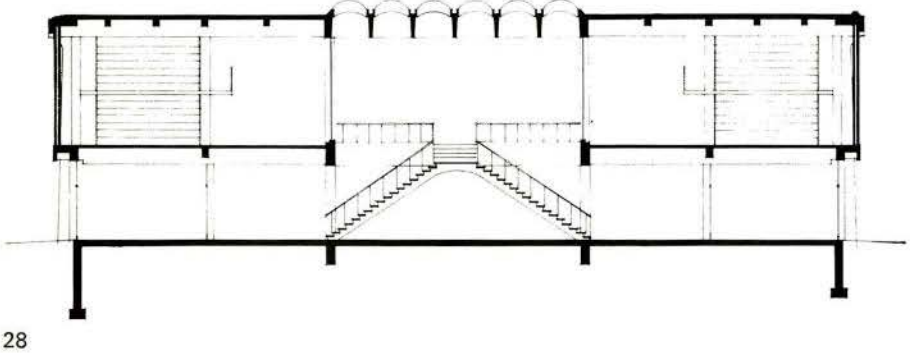


28

Selective Annotated Library Architecture Bibliography

This bibliography of library architecture consists of books, pamphlets, periodical articles, and proceedings of institutes and conferences in English, most published since 1954, with emphasis on the last five years. The individual items are grouped in three main sections: bibliographies, general works, and a final section which includes a number of specific topics. Within each section the arrangement is alphabetical.

The bibliography is not necessarily a selection of the best books on library architecture. Accessibility of the publications was a major factor in their inclusion.

The most recent publications on the subject may be found in *Library Literature*, a quarterly publication of the H. W. Wilson Company, New York.

Bibliographies

Bertram, G. B. Bibliography in Progress: public library location. In New Zealand Libraries, v. 26, Dec. 1963, p. 296–304.

Byers, Edna H. College and University Library Buildings: bibliographies. The several bibliographies compiled by Mrs Byers form a comprehensive listing of articles describing new college and university library buildings in the United States from 1917.
1917–1938 in her College and University Library Buildings. Chicago, American Library Association, 1939, p. 140–152; 1939–1945 in ACRL Monographs no. 11, 1954, p. 99–108; 1945–1953 in ACRL Monographs no. 10, 1953, p. 81–98; 1953–1954 in ACRL Monographs no. 11, 1954, p. 94–98; 1954–1955 in ACRL Monographs no. 15, 1956, p. 161–167; 1956– her College and University Library Buildings; bibliography.
In Southeastern Librarian, v. 11, no. 4, Summer 1961, p. 162–170.

Geer, Helen T. Select Readings on Planning College and University Library Buildings. *In* ACRL Monographs no. 15, 1956, p. 158–160. A brief annotated bibliography.

Library Architecture; reading list in use in the Provincial Library, Halifax, N.S. In Feliciter, v. 9, Feb. 1964, p. 17–20.

Naughton, D. M., comp. Public Library Buildings, a selected bibliography. In Wisconsin Library Bulletin, v. 58, Sept. 1962, p. 318–323.

Non-public Library Buildings in the U.K.; a selected bibliography 1950–1960. Library Association Record, v. 63, Feb. 1961, p. 48–49.

Schutze, Gertrude. Annotated Bibliography. In Lewis, Chester M., ed. Special Libraries; how to plan and equip them. [New York] Special Libraries Association, 1963, p. 92–102.

A Short Bibliography on Planning School Library Quarters. In American Library Association. Bulletin, v. 58, Feb. 1964, p. 128. A useful annotated bibliography including films and filmstrips.

Thompson, Anthony. Library Buildings of Britain and Europe. London, Butterworths, 1963. 326 p. The numerous references at the end of the chapters constitute a comprehensive bibliography on library buildings.

General Works

American Library Association. Building Committee. Planning a Library Building: the major steps; proceedings of the institute sponsored by the American Library Association Buildings Committee at St. Paul, Minnesota, June 19–20, 1954. Hoyt R. Galvin, editor. Chicago, Am. Lib. Ass., 1955. 80 p. Librarians and architects present their points of view in six papers on the three major steps in planning a library building: in programming, in preliminary planning, and in working drawings. The papers are based on descriptions and discussions of college and university, public library and school library buildings. Plans of six specific college and university library buildings are presented and criticized. Five brief papers on special aspects of planning and equipping libraries are appended. A bibliography is included: p. 79–80.

Ellsworth, Ralph E. Library Buildings. *In* State of the Library Art, v. 3, pt. 1. New Brunswick, N.J., Rutgers University Press, 1960. 151 p. This survey of the literature gives a good historical background. The author discusses the major problems that librarians face in planning new buildings. Includes bibliography.

Ellsworth, Ralph E. Planning the College and University Library Building: a book for campus planners and architects. Boulder, Colorado, Pruett Press, 1960. 102 p. The author considers the concept of the university library system, the problems involved in planning procedures, and a more detailed analysis of the basic elements in the design of a library. He concentrates on the planning process, rather than the actual building details, illustrating his points with many diagrams and floor plans. Included are bibliographical footnotes, as well as a bibliography: p. 96–97.

Ellsworth, Ralph E. and Hobart D. Wagener. The School Library; facilities for independent study in the secondary school. Edited by Ruth Weinstock. New York, Educational Facilities Laboratories [1963]. 143 p. A report on the design of secondary school libraries meant for individual use as a result of the adaptation of new educational concepts, technological media and learning materials. Includes photographs and diagrams. The last section of the report includes six library plans giving practical illustrations of the report. Bibliography: p. 137–139.

Galvin, Hoyt R. and M. Van Buren. Small Public Library Building [Paris]. UNESCO, 1959. 133 p. A practical manual which describes some of the tested principles and procedures in planning, constructing or remodeling a small public library. Applicable practically everywhere and particularly in countries where many public libraries have yet to be built. Includes a bibliography and photographs of libraries from many countries.

Heidtmann, W. H. Principles of Library Planning. *In* The Bookmark, v. 20, no. 2, Nov. 1960, p. 29–35. A discussion of the philosophy, principles, and policies that must be considered when planning a new library.

Hilligan, Margaret P., ed. Libraries for Research and Industry; planning and equipment. New York, Special Libraries Association [c1955] 58 p. (Special Libraries Association. Monograph no. 1) This publication is based on a program presented by the Science-Technology Division at the 44th annual meeting of the Special Libraries Association, Cincinnati, Ohio, May 16–21, 1954. It includes numerous photographs and floor plans of individual libraries. "Selected Readings on Library Planning", p. 58–60.

Institute on Public Library Architecture, University of Southern California, 1957. A Living Library; planning public library buildings for cities of 100,000 or less; papers. Martha Boaz, editor. Los Angeles; University of Southern California Press, 1957. 84 p. In these papers an attempt has been made to include information on the planning team, the site, the engineering and structural details within the building, on furniture and equipment, aesthetic features and interior decoration, cost analysis and the reading of blue prints. Includes illustrations, plans, and a bibliography.

Lewis, Chester M., ed. Special Libraries; how to plan and equip them. A project of the New York Chapter. [New York] Special Libraries Association, 1963. 117 p. (Special Libraries Association. Monograph no. 2) A collection of fourteen papers on planning and equipping special libraries, and a description of ten recently completed installations with floor plans and illustrations. Useful as a selective guide containing basic information on major considerations involved in structural and space requirements, as well as equipment. Includes a bibliography, p. 92–102.

The Library Association Record, v. 65, no. 12, Dec. 1963. The complete number of this British journal has been given over to reports of new library buildings in Great Britain and comments on them. Includes two papers given at the County Libraries Week-end School in April, 1963, in which an architect and a librarian present their views on library building and stress the importance of co-operation if successful building is to be achieved. Includes pictures, floor plans, description, and factual information about library buildings completed in 1962–1963.

Library Buildings and Equipment Institute, Kent State University, 1961. Planning Library Buildings for Service; proceedings. Edited by Harold L. Roth. Chicago, American Library Association, 1964. 127 p. The text of these Proceedings is made up of a number of general papers followed by the presentation of specific plans of college and university, public and school libraries. The service aspect of planning library buildings is emphasized.

Library Buildings and Equipment Institute, University of Maryland, 1959. Guidelines for Library Planners; proceedings. Papers presented at the Washington ALA conference. Edited by Keith Doms and Howard Rovelstad. Chicago, American Library Association,

1960. 128 p. A practical illustrated guide to major aspects of planning and equipping libraries, with comprehensive papers on general aspects of library building problems, plus a presentation, criticism, and discussion of the plans of eight college, university and public library buildings. A special feature is the pros and cons of remodeling, from the point of view of the librarian and the architect.

Library Buildings Institute, Chicago, 1963. Problems in Planning Facilities: consultants, architects, plans and critiques; proceedings. Edited by William A. Katz and Roderick G. Swartz. Chicago, American Library Association, 1964. 208 p.

Library Journal. New York, Bowker. This journal devotes one number each year to library architecture. Up to and including 1954, the December 15 issue contained this special feature. Since 1955, each December 1st issue has included articles on a wide variety of topics connected with library planning and equipment, as well as brief descriptive articles on individual libraries.

Lodewycks, K. A. Essentials of Library Planning. Melbourne, 1961. 136 p. This publication is a summary of the results of the author's research and experience in planning the Baillieu Library at the University of Melbourne. The text is "not intended to be a complete treatise on library planning", but it does furnish detailed practical information, including 19 diagrams on the planning of a large library.

Lyle, Guy R. The Administration of the College Library. 3d ed., New York, Wilson, 1961. 415 p. Chapter 16, Library Building and Equipment, p. 374–392, includes information on planning the building, the library program, and the furnishings. Includes bibliographical footnotes and additional references for further reading.

Metcalf, Keyes D. Planning Academic and Research Library Buildings. Sponsored by the Association of Research Libraries and the Association of College and Research Libraries. New York, McGraw-Hill [c1965] 431 p. The author has planned "a comprehensive manual dealing with the problems involved directly or indirectly in the planning and construction of academic and research libraries" as a result of wide and varied experience in the subject field. Includes numerous diagrams and floor plans. Appendix A: Program examples; Appendix B: Formulas and tables; Appendix C: A list of equipment that might be overlooked; Appendix D: Selective annotated bibliography; Appendix E: Glossary.

Mevissen, Werner. Büchereibau/Public Library Building. Essen, Heyer [c1958] 256 p. This book, in German and English, has been written with the idea of explaining the position of library building in Germany, but with international selection of examples of library buildings and rooms. Included are details such as the calculation of the necessary useful space, a functional form of furniture, and the technical equipment of library rooms. With its numerous examples of floor designs, and discussion of various types of libraries, this publication has international use and interest.

The Pioneer. New York, Library Bureau, Remington Rand Systems. This journal is devoted to library planning and gives excellent floor plans, illustrations, and descriptions of libraries.

Planning the New Library Series. *In* Special Libraries, v. 49– , Feb. 1958– . Descriptions, floor plans, illustrations, and vital statistics for a variety of new and remodeled special libraries. The series appears four to eight times throughout the year.

Thompson, A. Library Buildings of Britain and Europe; an international study, with examples mainly from Great Britain and some from Europe and overseas . . . with contributions by specialists. London, Butterworths 1963. 326 p. A comprehensive work with international coverage, providing basic data for the architect about the organization of libraries. For librarians and library committees engaged in preparing a building program, it offers essential background reading and a source for comparative analysis. Invaluable reference book on the operations of many important libraries. Part I – Synthesis: The creation of a building. Part II – Analysis: Existing buildings. Illustrated with plans and photographs of selected good examples of the main types of libraries.

Toffler, Alvin. Libraries. *In* Educational Facilities Laboratories. Bricks and Mortarboards; a report on college planning and building. New York, 1964. p. 69–98. An excellent discussion of the present situation in North America's college and university libraries, with particular reference to changes in physical facilities as a result of the adaptation of technological advances in planning for library service.

UNESCO Bulletin for Libraries, v. 17, no. 6, Nov.–Dec., 1963. Includes five illustrated articles and bibliographies on university library problems. 1 The construction of university libraries; how to plan and revise a project, by Jean Bleton; 2 Climate as a factor in the planning of university library buildings, by Wilfred Plumbe; 3 Lighting in university libraries, by Robert T. Jordan; 4 Storage in university library buildings, by F. J. Hill; 5 University library interiors: fixed functions or modular, by W. Piasecki.

U.S. Office of Education. Library Facilities for Elementary and Secondary Schools. [Washington, U.S. Government Printing Office, 1965] 43 p. Written as an aid to educators and to architects in the planning and design of school libraries. Information and suggestions were obtained by visits to 73 elementary and secondary schools in the United States. Includes photographs and diagrams. Appendix A contains "Selected references"; Appendix B: "Checklist of furniture and equipment."

Wheeler, Joseph L. The Small Library Building. [Chicago, American Library Association, 1963] 36 p. (American Library Association. Library Administration Division. Small libraries project, no. 13) A brief discussion of library design and location, the efficient use of space, and the question of remodeling. Illustrated with reference to specific buildings. Also includes photographs, floor plans, diagrams.

Wilson, Louis R. and Maurice F. Tauber. The University Library; the organization, administration, and functions of academic libraries. 2d ed. New York, Columbia University Press, 1956. 641 p. Chapter 14, Buildings and Equipment, p. 481–525, contains a concise discussion on planning for the various functions of the university library. Included is a bibliography: p. 522–525.

Acoustics

National Research Council. Building Research Institute. Noise Control in Buildings. Washington, 1959. 136 p. (National Research Council Publication 706) Analyzes the noise control problems arising in all types of buildings because of the increased use of lighter weight construction for exterior walls, interior partitions, and floors. Noise problems created by mechanical equipment are also discussed. Recommendations for noise control and a complete model specification for the control of noise from mechanical equipment provide practical guidance for the building designer.

Architects

Canadian Library Association. Committee on Architecture and Building. List of Canadian Architects with Experience in Designing Library Buildings. Ottawa, 1959. 11 p. (Its Occasional paper no. 20) A list of architects, together with the library buildings they have designed from 1945 to 1959. This publication is a record, not an evaluation of the architect's work, and needs to be brought up to date.

Cowgill, C. H. and G. E. Pettengill. The Library Building. In Journal of the American Institute of Architects, v. 31, no. 5, May 1959, p. 55–66; v. 31, no. 6, June 1959, p. 103–113. A guide for the architect with a library to build. Discussion of location, program, checklist of requirements, preliminary decisions, schematics and mechanical equipment of different classes of libraries.

Ellsworth, R. E. Consultants for College and University Library Building Planning. *In* College and Research Libraries, v. 21, July 1960, p. 263–268. The author describes the duties of the consultant and tells in detail how to prepare a written program. A model outline of a successful program written by Ellsworth Mason for Colorado College is reprinted here.

Automation

Automation and the Library of Congress; a survey sponsored by the Council on Library Resources Inc., submitted by Gilbert W. King, and others. Washington, Library of Congress, 1963, 88 p. This report of a survey of the feasibility of mechanization of research library activities and of requirements for such mechanization has serious implications for library planners.

Bolt. Beranek and Newman, Inc. Toward the Library of the 21st Century; A report on progress made in a program of research sponsored by the Council on

Library Resources. Cambridge, Mass., 1964, 41 p. Deals with the role that the science of information handling can play in solving the problems of the library of the future.

Book Stacks

Cox, Julius G. Optimum Storage of Library Material. Lafayette, Indiana, Purdue University Libraries, 1964, 222 p. Written as a doctoral thesis, this study of the problem of book storage in libraries emphasizes the saving of space through the use of compact storage. The author includes many diagrams and tables.

Kaplan, Louis. Shelving. *In* State of the Library Art, v. 3, part 2. New Brunswick, N.J., Rutgers University Press, 1960. 41 p. A bibliographical essay covering 116 references on shelving and storage of books, microcopies and other library materials.

Climate

Plumbe, W. J. Climate as a Factor in the Planning of University Library Buildings. *In* UNESCO Bulletin for Libraries, v. 17, no. 6, Nov. 1963, p. 316–325. A brief introduction to the subject, followed by a list of addresses where additional information may be obtained. Includes plans and a bibliography.

Construction

Messman, H. A. Building Materials in Library Construction. University of Illinois, Graduate School of Library Science, 1963. 23 p. (Its Occasional Paper no. 67) In this paper, materials and the associated construction techniques have been grouped into their functional application in library structures. Included are the following functional groups: footing and foundations, framework, roofing, subfloors, window frames, sheet metal work, glass and glazing, painting, exterior walls and interior walls.

Costs

Metcalf, Keyes D. Library Building Costs. *In* College and Research Libraries, v. 26, March 1965, p. 109–113. A recent article written in an attempt to achieve standardization in the collection of statistics for library buildings. Includes a report form for collecting data on building costs.

Floors and Floor Coverings

Armstrong Technical Data, 1964–65, Lancaster, Pa., Armstrong Cork Company, Floor Division, 1964, 56 p. Useful for comparative data on the physical characteristics and cost of various types of resilient floors. Berkeley, Bernard and Cyril S. Kimball. The care, cleaning and selection of floors and resilient floor coverings. New York, Ahrens Publishing Company, 1961. 45 p. An authoritative manual with tables comparing the physical characteristics of various types of floor coverings.

Berkeley, Bernard, and Cyril S. Kimball. The Selection and Maintenance of Commercial Carpet. *In* Cornell Hotel and Restaurant Administration Quarterly, v. 3 (4) Feb. 1963, p. 47–78. Useful for anyone contemplating the use of carpeting in a library; contains illustrations, tables, references, and a glossary.

Furniture and Furnishings

Library Equipment Institute. 1st, University of Miami, 1962. Library Furniture and Equipment. Edited by Alphonse F. Trezza and others. Chicago, American Library Association, 1963. 68 p. A report of the proceedings of the first of a series of Institutes to be held in alternate years, and sponsored by the Library Administration Division of the American Library Association. Included are papers presented to the Institute on the following topics: furniture selection, book stack selection, specification writing and bidding procedures, equipment and methods in catalogue card reproduction, in photocopying, and in the production of full-size copy from microtext. A final question and answer period and panel discussion on library equipment is included also.

Library Equipment Institute. 2d, St. Louis, 1964. The Library Environment; aspects of interior planning. Edited by Frazer G. Poole. Chicago, American Library Association, 1965. 69 p. Includes 16 diagrams. This second Institute, like the first, emphasizes equipment and furnishings for the library, rather than the planning of the building. The report includes the texts of the papers presented at the Institute, the panel discussions that followed, and queries from the audience answered by the program speakers. The arrangement is under five main headings: furnishings, illumination, audio, transportation, and flooring.

Poole, Frazer G., ed. Library Furniture and Furnishings. *In* Library Trends, v. 13, no. 4, April 1965, p. 385–524. Eleven articles present basic information on the functional requirements of library furniture and equipment. Several of the articles include bibliographical references.

Heating and Ventilation

Air Conditioning for Modernization: libraries and museums: bibliography. *In* Air Conditioning, Heating and Ventilation, v. 60, April 1963, p. 63–65.

American Society of Heating and Air Conditioning Engineers. Heating, Ventilating, Air Conditioning Guide. 37th ed. New York, 1959. 476 p. Comprehensive work providing technical data and reference material on the design and specification of heating, ventilating and air-conditioning systems. Includes a manufacturers' catalogue section.

Greenberg, A. Library Air-conditioning Design. *In* Architectural Record, v. 135, Feb. 1964, p. 173–4.

Lighting

Jordan, Robert T. Lighting in University Libraries. *In* UNESCO Bulletin for Libraries, v. 17, Nov.–Dec. 1963, p. 326–336. A nontechnical survey, written for the librarians; contains a select bibliography.

Lighting a Library; IES lighting data sheet. *In* Illuminating Engineering, v. 59, October 1964, p. 685.

Programming and Planning

Nottinghamshire, England. County Council. Design for Small Branch Libraries: a brief prepared for use in the County Architects Department in collaboration with the county librarian. Nottingham, The Council, 1963. 14 p. This brief is the outcome of many discussions between senior architects and librarians. Discusses the size, expansion, siting, plans, layouts for different library collection areas. Should have value to librarians and architects as a model rather than as a standard.

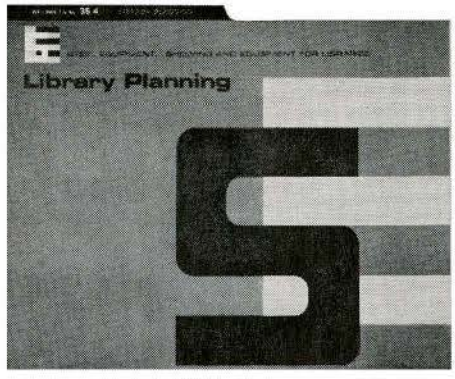
Site Selection

Wheeler, Joseph L. The Effective Location of Public Library Buildings. Urbana, Illinois, University of Illinois Library School [1958]. 50 p. (Illinois. University Library School. Occasional papers, no. 52) The author discusses the factors involved in the choice of a site for the public library in order to assure maximum service with minimum operating costs. He illustrates his theories with specific examples. Included are bibliographical references, as well as photographs and diagrams. His arguments should be of interest to all library planners.

Asta Luik, Librarian
Sue Warren, Assistant Librarian
School of Library Science, University of Toronto

if you're planning a library

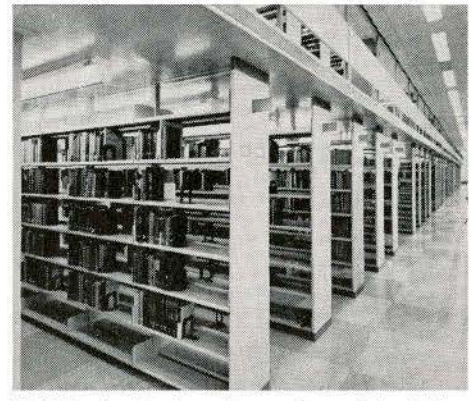
read a little, first.



There's practical help inside this brochure . . . practical help to guide you through the complex task of planning, directing or supervising a library.

You must cope with storage of and access to an extensive and continually expanding collection of books, documents and periodicals.

That calls for such careful organization and flexibility of space that we maintain a Library Consultancy Service to give assistance. You'll learn more about this and other vital considerations if you read the contents in our Library Planning brochure. You can get it and any other information from: Mr. D. J. M. Izzard, Steel Equipment Division of Eddy Match Company Ltd., 819 Yonge St., Toronto 5, Area Code 416, 927-4584, Cable: Steelequip.



Multi-tier bookstacks and mezzanine cellular decking installed in September, 1964 at University of Victoria, B.C. Mr. Dean W. Halliwell, Chief Librarian. R. W. Siddall Associates, Victoria, B.C., Architect

STEEL EQUIPMENT DIVISION OF EDDY MATCH COMPANY LIMITED

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Normal Footings

Technical Technique 6

The normal or spread footing may be described as an enlargement of the base of a column or wall for the purpose of transmitting the load to the subsoil. Spread footings, as we are concerned with here, may be classified as follows:

– A wall footing which supports a foundation wall and runs continuously for the full length of the wall.

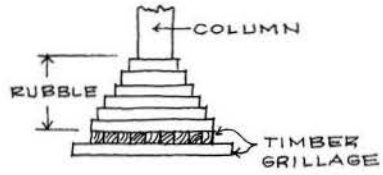
– An isolated or column footing which supports a single concentrated column load.

– A combined footing which supports more than one column load.

– A cantilevered or strapped footing which supports two column loads and consists of two footings which are joined together by a beam or strap.

– A raft or mat footing which is a single slab extending under the entire building supporting all wall and column loads.

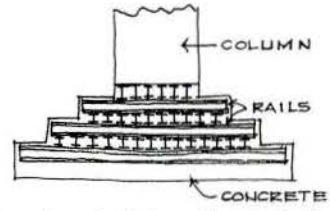
Up until the time of the development of large buildings with high column loads, most footings were constructed of masonry. Prior to the widespread use of reinforced concrete, heavy building loads were often carried on rubble or individual stone footings supported on timber grillages. These grillages consisted of oak timbers laid in opposite directions projecting beyond the edge of the masonry as shown in (Fig 1).



1

As an improvement over timber, a grillage consisting of steel railway tracks was used, (Fig 2). These tracks were later replaced by I beams. With the widespread use of reinforced concrete after 1900, the use of masonry in footings quickly declined.

In the early years of foundation design, the size of footings was determined by the



2

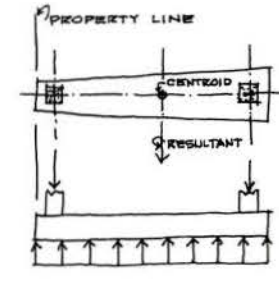
engineer based solely on his practical knowledge in the field. It was not until the 1870's that a more scientific approach was taken in proportioning the size of footings. Research in the field of soil mechanics eventually led to the establishment of the principle of allowable soil pressures which were often specified in building codes and ordinances of various cities. The construction of larger buildings and the incidence of foundation failures demanded further development to determine the ultimate bearing capabilities of soil and rock.

Marked variations often occur in short distances as soils are subject to wide variations in general type and physical properties. Also, the location of ground water is of particular importance in establishing the ultimate bearing capacity of the soil. This matter is complicated by the fact that soils are affected to a varying degree by the presence of water. In addition, the water level in certain localities may experience marked seasonal change. The removal of trees, demolition of adjacent buildings and the construction of new buildings can also greatly affect the level of saturation of the subsoil. These conditions which are important in foundation design are often difficult to assess.

On the basis of exploratory findings, together with penetration and simple laboratory tests, an engineer can usually determine in sufficient detail the characteristics of subsoil. The bearing capacity is often determined by the characteristics of those elements which are considered weak. The presence of a soft area below firm strata is always of concern to the designer and a number of failures have occurred where the pressure from loaded footings have broken through the firm soil into the underlying softer material. Where the firm strata is thin, it is often advisable to design the footings on the basis of the capacity of the weaker material, or it may be necessary to consider an alternative foundation system or excavation of the soft material. Even if the allowable pressure on the soft material is not exceeded, the settlement of the footing may be excessive. The acceptable limits of settlement, which vary considerably from one building to another, must be determined by the engineer. If it is determined that the building cannot be supported on footings near the surface of the ground, piers may be used to transmit the weight to footings at sufficient depth to sustain the load. If this is not possible, piles or other means may have to be used.

Where subsoil types consist of wedge or similar irregularly shaped masses, it is extremely difficult to estimate accurately the allowable bearing capacity. The soil must be analyzed to determine the most unfavorable combination of circumstances on which the design must be based.

Where the suitability of spread footings is indicated by analysis or possibly a load test, the type of footing will depend on the nature of the superimposed load. Whereas wall footings and column footings are widely used, the need for a combined footing arises when two columns are too close together to make two separate footings possible, or when it is impossible to centre an isolated footing under a column



3a

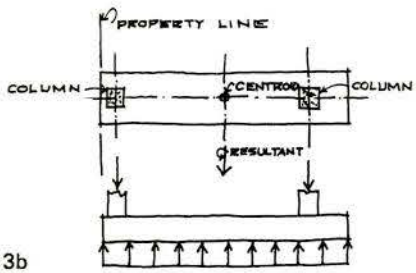
load as is often the case when a wall column is close to a property line (3a & 3b). In order to maintain a uniform distribution of soil pressure, the centroid of the area of the footing should correspond to the

3a: Rectangular
3b: Trapezoidal

Huntington, Whitney, *Building Construction*. New York, John Wiley and Sons, 1949. 674 pp.

McKaig, Thomas H., *Applied Structural Design of Buildings*. New York, F. W. Dodge Corporation, 1956. 442 pp.

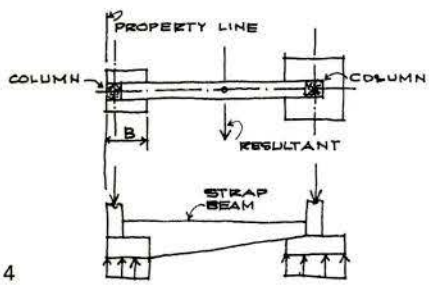
Peck, Ralph B.; Hanson, Walter E.; and Thornburn, Thomas H., *Foundation Engineering*. New York, John Wiley and Sons, 1953. 410 pp.



3b

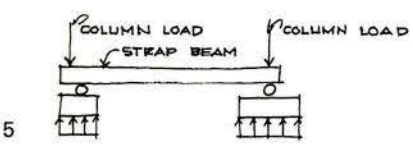
resultant of the column loads. Provided that the allowable soil bearing pressure is not exceeded, the footing should not rotate or settle.

Where it is necessary to support a wall



4

column near the edge of a footing, a cantilevered footing is sometimes used. This footing which consists of two isolated footings connected by a beam as shown (Fig 4) must be designed, taking into consideration the cantilever principle as shown (Fig 5). If the allowable bearing



5

pressure has been established and if dimension B of the wall footing is fixed or assumed, the proportioning of the two individual footings becomes a problem in statics. As was the case with the combined footing, the centroid of the area of the two footings must coincide with the resultant of the column loads.

Another type of footing to consider, when the building loads are high relative to the allowable bearing pressure of the soil and the size of footings tend to become excessive, is the raft footing. This footing is usually designed as a reinforced concrete flat slab with the centre of gravity of the slab located at the center of the combined superimposed loads. Special consideration, however, must be given to the moments and shears caused by differential settlement. As a result, the slab is usually heavily reinforced to withstand these stresses. In the case of large slabs located on subsoil likely to produce marked differential settlement, measures are often taken to stiffen the slab. This is sometimes accomplished by partitions which form a grid or rigid frame. Where such a solution is not possible, an alternative foundation system is likely more economical. In order to determine the settlement of this type of footing, allowance must be made for the buoyant effect of the surrounding subsoils as a result of the excavation.

Depending on the nature of the subsoil, the weight of the building is offset by a pressure equal to or approaching the weight of the excavated material. Where the subsoil is not capable of sustaining the superimposed load of a building, advantage may be taken of this principle by designing a deeper excavation.

Through the development of soil mechanics, new techniques for selecting the best type of footing under a given set of circumstances has become highly developed. Occasional failures however, indicate the importance of the combined development of soil mechanics and foundation engineering. Whereas recent developments in this science tends to discount the past experience of trial and error, this practical knowledge nevertheless will continue to play an important part in directing future research.
William J. Neish

Estimating

Work below ground can be divided into three headings for preliminary estimating purposes. The first of these is "Normal Foundations" which is intended to cover the cost of normal column and wall footings and their associated foundation walls. The quantity factor for this element is the area of the foundations on site, which is usually, but not always, the same as the area of the slab on grade. The area is measured to the outside face of the exterior foundation walls. If, for example, the second floor overhangs the first floor, there is no basement (or if there is, it is the same area as the first floor) and columns are provided outside the perimeter of the first floor, then the area of "Normal Foundations" would correspond to the area of the second floor, not to the first floor slab on grade.

To this area a price ranging from 60c. to $4.00 per square foot is applied, depending on whether it is a single storey building with simple footings or a multi-storey building with a raft foundation. An average price one might expect for a school would be 85c. per square foot and for a medium-sized office building $1.00 per square foot.

Having established a price for "Normal Foundations", the next heading is "Basement". This is the additional cost of excavation and backfill in order to provide a basement. It does not cover the cost of the basement walls which are included under a later heading "Walls Below Ground". The quantity factor for "Basement" is a cube derived from the gross area of the basement, measured to the outside face of the basement walls, times the depth from the underside of the lowest floor slab to the level of the existing grade. To this cube a price of 8c.–12c. per cubic foot is applied.

The third and last heading to be considered under the general heading of substructure is "Abnormal Foundations". This covers the cost of special items such as piling, caissons, special dewatering, sheet piling, underpinning and other special foundation conditions. No general rules can be applied to these items since each is particular to its own job. As a guide, however, piling and caisson costs range from about $8.00–$30.00 per lineal foot, sheet piling from $3.00–$6.00 per square foot, and underpinning about $60.00 per lineal foot and up. *F. W. Helyar*

Schools
Ecoles

7

Drawing of Piazetta San Marco by Paul Tarjan, fifth year student, University of Toronto School of Architecture. Mr Tarjan was a recipient of an American Standard Travelling Scholarship.

Thomas E. Martin and John Hackett, fourth-year students at the University of Toronto School of Architecture, were adjudged co-winners of the Hunter Douglas Architectural Competition open to second through to fifth-year students at the university. The competition involved the design of a portable school, including a portable classroom unit, a portable service unit and a portable connector unit, using Permawall as the principal material.

The following is a short excerpt from a problem analysis on public libraries done by the fifth year students at McGill University School of Architecture under the direction of Prof N. Schoenauer.

Entrances

Location of entrances

a The shape and location of the site can greatly influence the location of the entrance and thus the entire layout of the building.

b Scheme A shows the entrance located in one of the narrow ends or on one of the long sides near the end. In this case, the public service rooms will be arranged so that the highly frequented areas are near the entrance and are followed by the less frequented areas. Thus the further one gets into the library the less traffic is encountered and greater is the chance for peaceful concentration. Such a scheme is unfavorable for a combined children's and adult library; for one or the other it is quite favorable.

c Scheme B shows the entrance on one of the long sides. The working rooms are placed towards one of the narrow ends. This provides a clear separation between internal and public services.

d In scheme C the entrance is placed in the centre of one of the long sides. This is the usual arrangement in a combined children's and adult library of single storey construction.

It is also applicable to single purpose libraries. Then around the entrance hall the sections of the public services can be placed beginning with the highly frequented ones left of the entrance continuing opposite the entrance and ending on the right of the entrance with the less frequented areas. This is especially favorable for square or nearly square layouts.

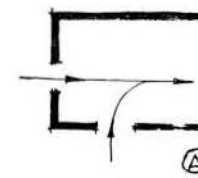
In multi-level buildings the problem is two-fold with both entrance and stairs to be located.

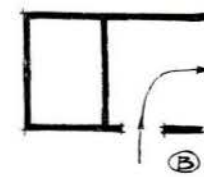
e In scheme D the entrance and staircase are located at one of the narrow ends. The departments are definitely separated if placed on different levels. This is especially favorable for a combined library as each part is strictly isolated.

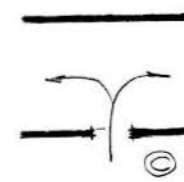
f Scheme E again gives the clear separation of administration and public rooms. In all other aspects the comments of scheme C apply.

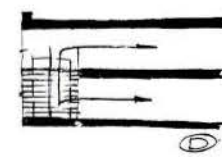
g In this scheme the public entry is placed in the centre of one of the long sides and the floors are connected through an open staircase. The much frequented sections are placed near the entrance and those less frequented arranged on the upper floor. This divides the building into four strictly separated areas which may or may not be a blessing.

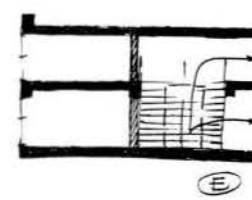
Ian David Ritchie
John David Surridge

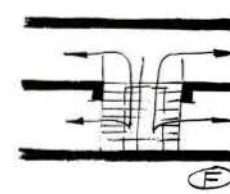












Letters
Lettres

8

Editor, Journal RAIC/L'IRAC

Financiers, politicians, planners and architects have spoken and written in defence of the old City Hall opened in 1899. Laymen, citizens and voters have appealed for the retention of a building whose rugged walls and dynamic roofs add vitality and interest to our Civic Square. All are agreed that the trilogy of Osgoode Hall, Revell's curving towers and the old City Hall make a dignified composition of which any city might well be proud.

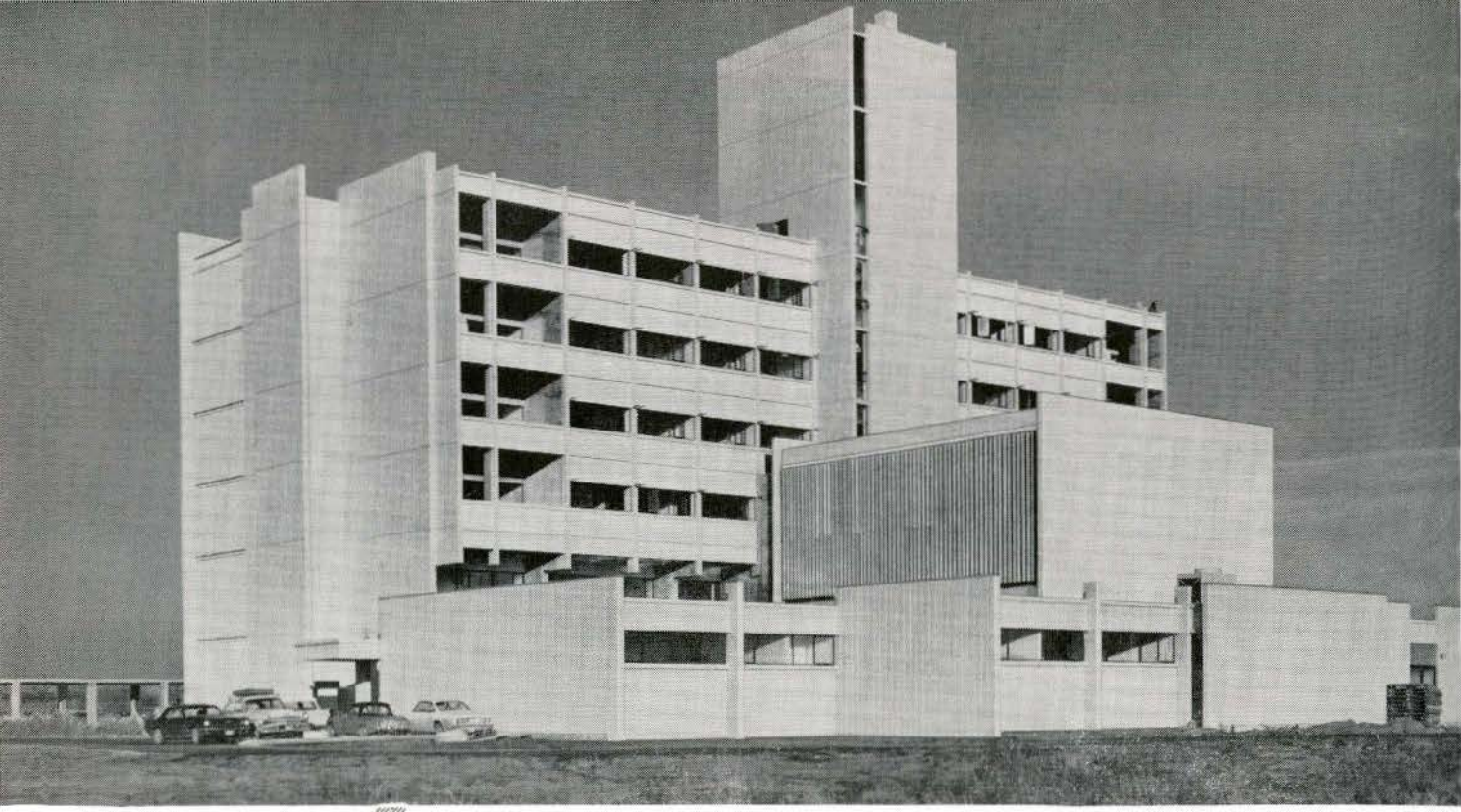
And yet, in spite of this, the splendid promise of a revitalized urban core has been cheapened and weakened by a selfish demand for the demolition of our venerable municipal building. It is as if Woolworth's in New York suggested the sweeping aside of the fine old City Hall to make way for a five and dime arcade. Philadelphia, which has led the way in urban renewal, has made the turn of the century City Hall and Independence Hall integral parts of their redevelopment. Surely the elected and appointed representatives of the citizens of Toronto have an equal regard for, if not the aesthetic value and historic worth of a fine building, at least a rudimentary concern for the financial value to the city of a supplementary municipal building.

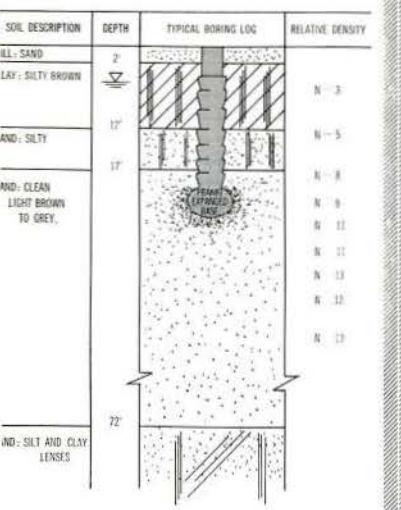
It has been suggested that the building be renovated to function as a supplementary civic building. Even now the new City Hall has inadequate provision for meetings of associations and civic groups. There is insufficient space for the reception of distinguished visitors and accommodation for study or research panels. These functions could be housed in a dignified and handsome manner in the old City Hall. Supplementary rental accommodation could be made available to, say, civic organizations, ethnic and special interest groups.

Few would deny that there is an urgent need to revitalize the run-down fabric of Yonge Street. The placing of an immense eyeless department store on the site of the old City Hall will effectively ensure that Yonge will remain cut off permanently from the civic core of the city. It is nothing short of naïve to believe that Eaton's cannot achieve a magnificent potential in the area bounded by Albert, Bay, Yonge and College. Separated from Simpson's by the old City Hall and a square with elegant shops, restaurants and facilities below grade as in Place Ville Marie, this would create a superb cross axis linking Yonge to University Avenue. That this or some alternate scheme which can respect the striking composition of Lennox's fine building is necessary can be seen by a glance at Eaton's preliminary sketches. The grotesque profile of the spire when cut away from the building for which it was designed is a clumsy artifice unworthy of the responsible planners and architects who are striving so desperately to give form and logic to our city.

As a citizen of Metropolitan Toronto may I suggest that for Council to sanction the sale of this venerated and justly famous building to a private developer would be an act of vandalism and a betrayal of public trust unequalled in the history of this city.

James Acland, Toronto





Lulu Island sands carry high loads

Problem

The municipality of Richmond, British Columbia, is located on Lulu Island, in the Fraser River delta. The topography of this area is flat and the mean surface elevation is approximately 4 feet above sea level. The underlying soils are alluvial in nature with interspersed beds of sands, silts and clays.

At the site of the Richmond General Hospital, loose clean sands existed from 17 to 72 feet in depth with N = 10 average and 2% grain size passing a No. 200 sieve.

The structural problem was to design a multi-storey hospital on this site where spread footings were seldom allowed more than 600 psf. contact pressure. A system was needed to transfer highly concentrated loads through the incompetent surface layers and establish bearing in the clean sands.

Solution

A pile foundation was indicated. The bearing layer, however, was very loose throughout its entire depth to 72 feet. Only one system had the capability of improving the carrying capacity of the bearing layer by compaction so that high loads could be developed at a shallow economical depth. The Franki Caisson-Pile provided this advantage and was the obvious choice.

Under these conditions, the Franki system offered these advantages:

1. Easy driving to a predetermined depth with maximum penetration into the bearing layer of only 6 feet.
2. At this depth, the sand was compacted by ramming out zero slump concrete from the bottom of the casing using a 7,000-pound drop hammer. This procedure formed a pile base which reduced the void ratio of the sand to a minimum. The relative density in the immediate vicinity of the base was thereby increased to a maximum to allow very high contact pressures.
3. The pile casing was withdrawn in short lifts as concreting of the shaft proceeded, preventing the intrusion of water or fluid soil into the caisson-pile.
4. With the accurate soils information made available, it was possible to present a lump sum price for the total foundation without escalation for additional footage due to unforeseen driving conditions.
5. Five load tests were carried out under National Building Code requirements to twice the design load. Average results were as follows:

Settlement under design load at 100 Tons	= 3/32"
Settlement under test load of 200 Tons	= 9/32"
Net settlement at 0 Tons	= 3/32"

The Franki Caisson-Pile is the right foundation for conditions such as those found at Richmond, British Columbia.

OWNER:
Richmond Hospital Society
LOCATION:
Richmond, B.C.
STRUCTURE:
General Hospital
ARCHITECTS:
Thompson, Berwick and Pratt, Vancouver, B.C.
STRUCTURAL ENGINEERS:
O. Safir & Co. Ltd., Vancouver, B.C.
SOILS ENGINEER:
Paul M. Cook, Vancouver, B.C.
GENERAL CONTRACTORS:
Dawson & Hall Limited, Vancouver, B.C.
NUMBER OF FRANKI UNITS:
256 Reinforced Caisson-Piles
WORKING LOAD:
100 Tons
DRIVEN LENGTH
23'–6"
CONCRETED LENGTH:
20'–0"

Classified Annonces Classées 9

Appointments

K. M. Munnich, MRAIC, formerly Planning Director, City of Halifax, NS, has been appointed Planning Director for the Lower Pioneer Valley Regional Planning Commission with offices in Springfield, Mass. He will be pleased to receive trade and technical literature at his new address, 113 Emerson Road, Longmeadow, Mass. 01106, U.S.A.

The Canadian Society of Landscape Architects has appointed Mrs Cynthia Steer to the position of Executive Secretary. Mailing address is Box 3304, Postal Station "C", Ottawa.

Practice Notes

Donald G. Rankin, MRAIC. has commenced private practice at 2842 Bloor St. West, Toronto 18.

Roger Kemble, MRAIC, and Alex Webber, MRAIC, have formed a partnership Kemble/Webber Architects, 413 Birks Building, 718 Granville St, Vancouver 2.

R. W. Siddall, B. Arch., FRAIC and Donald D. Dennis, B. Arch., MRAIC have announced the formation of a partnership, Siddall, Dennis & Associates with offices at 610 Royal Trust Building, Victoria, BC. Mr Claude H. Maurice, B. Arch., MRAIC has been appointed as an associate.

Changes of Address

Henry Kalen, MRAIC, the Winnipeg architectural photographer, much of whose work has appeared in the *Journal* over a number of years, now shares studio accommodation with the Graphic Group at 545 Broadway Avenue, Winnipeg, Manitoba.

Somerville, McMurrich & Oxley have moved to new office accommodation at North American Tower, 797 Don Mills Road, Don Mills. The new telephone number will be 429-2103.

Employment Wanted

British Architect, ARIBA, elected 1938, 50 years old, considerable experience, nearly all types of buildings, in practice as principal or partner during last eight years, seeks position in Canadian architectural firm with view to immigration. Contact Alex. F. Watson, ARIBA, 23 Southend Road, Beckenham, Kent, England.

Filipino Architect, 24 years old, graduate from the University of Santo Tomas, three years experience in estimating and specification writing, wishes employment in Canada. Write Arturo M. Santiago, 1301 Lepanto, Sampaloc, Manila, Philippines.

Chinese Architect, graduate from Cheng Kung University, Tainan, Taiwan in 1959 (BSc), six years office experience, seeks position in Canada. Write: Ho Sung-yip, Flat 817, 180 Tsat Tse Mui Road, North Point, Hong Kong.

Australian Architect, 26 years old, BArch, ACT, NSW, ARAIA, graduate from Sidney University, two years experience as an Architect Class I with Dept. of Works, Canberra, seeks position in Canada preferably Toronto. Write: Neil Renfree, 32 Collier Street, Curtin, Canberra, A.C.T.

Filipino Architect, 28 years old, graduate from the University of Sto. Tomas (BSc), seven years experience in leading architectural and engineering firms, wishes employment in Canada. Write Jaime F. Formento, 417 Bustillos, Sampaloc, Manila, Philippines.

Registered Filipino Architect, graduate from The Mapua Institute of Technology, wishes position in Canada. Write Delfin U. Centeno, 2644-A M. Natividad Street, Sta. Cruz, Manila, R.P.

Indian Architect, Government Diploma in Architecture, graduate from Sir J.J. College of Architecture, AIIA, 3 years office experience, wants employment in Canada. Reply Noshir Nariman Dastoor, 764 E', Rilak Road, Dadar, Bombay-14, India.

British Architect, diploma from the Architectural Association School of Architecture, specialized in urban development schemes, 26 years old, wishes employment, preferably in Toronto. Reply Christopher T. Wallis, 16 Thurloe Place Mews, London, S.W. 7.

Filipino Architect, 32 years old, graduate from the University of Sto. Tomas, BSc, ten years experience as a practising architect, seeks position in Canada. Write Tomas I. Nazareno, Pelaez Street, Naic, Cavite, R.P.

Graduate of Sir J.J. College of Architecture, Bombay, Government Diploma in Architecture, AIIA, five years' practical experience, 25 years old, seeks position in Canada. Reply R. H. Kapadia, 43 Fergusson Road, Bombay 13, India.

British Architect, diploma from the Architectural Association School of Architecture, specialized in urban development schemes, 26 years old, wishes employment, preferably in Toronto. Reply Christopher T. Wallis, 16 Thurloe Place Mews, London, S.W.7.

British architecture students at Leicester College of Art, working toward the RIBA Intermediate standard, seek positions in Canada next summer during their holidays. Write K. Cooke, P. Mason, R. K. Bryant, 1 The Crescent, King Street, Leicester, England.

Two British architectural students, University of Strathdyde School of Architecture, Glasgow, seek position in Canada for one year, after gaining their RIBA Intermediate. Reply Peter J. Robinson, Baird Hall, 460 Sauchiehall Street, Glasgow, C.2., Scotland.

Filipino architect, graduate of the University of Santo Tomas, 3 years experience, presently chief architect of Hayden Construction Inc., seeks position in Canada. Write: Benedicto B. Zafra, 1234 Nebraska, Ermita, Manila, R.P.

Filipino architect, 33 years old, graduate of Mapua Institute of Technology (B.Sc.), ten years experience, wishes a position in Canada. Reply Nicanor P. Palomares, 1520-AA. Mabini, Caloocan City, Philippines.

Japanese architect, 30 years old, B.Sc., Meiji University, Tokyo, 6 years experience, since 1964 own practice, wishes employment in Canada. Write Hai Chon Kim, 60 - Z Higashi-Naramatue-cho, Hyogo-ken, Japan.

Architect, graduate of the Hong Kong Technical College, 25 years old, 5 years experience, seeks position in Canada. Reply Wong Bing Chuin, Flat "C" – 12th Floor, 694 King's Road, G.P.O. Box 14605, Hong Kong.

Filipino architect, graduate of the University of Santo Tomas, B.Sc., MPIA, MAA, 18 months study at the Technical University of Berlin, German-language studies in Munich, 29 years old, 5 years experience in the Philippines and 1 year in London, England, seeks position in Canada. Reply Jose A. Lazaro, c/o C. D. Arguelles and Associates, Makati Ave. – Pasay Road, Makati, Rizal, Philippines.

Filipino architect, graduate of the University of Santo Tomas in 1963 (B.Sc.), 2 years experience, 26 years old, seeks position in Canada. Reply Miss Delia A. Diacuna, Dingle, Iloilo, Philippines.

Indian architect, graduate from Sir J. J. College of Architecture. Diploma in Architecture, AMIIA, 3 years experience, seeks position in Canada. Write Vasant R. Bhagat, Prabhudas N. Building, 27/2nd Floor, Tank Bunder Road, Mazagaon, Bombay-10, India.